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VETERINARY MEDICINE

4753 GRAND BOULEVARD
Chicago

Is the Mystery of Periodic Opthalmia Solved?
The Tucking Operation for Ventral Hernia.
Minerals for Live Stock.
Prevention and Control of Tuberculosis.
Foreign Bodies in the Reticulum.
Metritis in Sows.
Suggestions on Porcine Abortion.
The Eggs and Larvae of Dog, Cat, and Fox Parasites.
Milk Versus Beef Types.
Feeding Orphans with Milk of Other Species.
Cooperation in Live Stock Disease Control, and Other Articles.

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VOL. XVII NO. 4

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Veterinary Medicine

Vol. XVII APRIL, 1922 Number 4

No Amateur Horse Doctors Wanted

WITH reference to the issue of medical supplies to stable sergeants and possibly other noncommissioned officers of the line of the army for the treatment of minor injuries to animals to be included in a wallet to be designated as "farrier's wallet," the surgeon general of the Army is forced to place himself on record as absolutely opposed to such issue to non-technical troops. He would take precisely the same position if it were proposed to issue medical supplies to the first sergeants of each unit for the treatment of minor injuries of men. His objection is based on the fact that a veterinary service, commissioned and enlisted, is now available throughout the Army for the care of sick animals precisely as such service is available for the care of sick men. Veterinary personnel is assigned to every station of any consequence and will be available with every regiment and larger unit in time of war. So far as known, it has never been proposed to attach medical personnel or to furnish medical supplies to units smaller than the regiment such as the company or troop. Under present conditions practically no sick or injured animal need lack the professional care of a veterinary officer and his trained enlisted assistants. It is stated:

No Sympathy with Pseudo-Professionals

"The surgeon general confesses to a lack of sympathy with a proposal which encourages the practice of veterinary medicine by sergeants of the line under any circumstances. The Army can not, in his opinion, afford to develop and maintain a group of amateur horse doctors whose activities have in the past tended to discredit the science of veterinary medicine and will doubtless so continue in the future. The treatment of minor injuries is not a minor matter, because such conditions frequently result in prolonged disability and loss of life. Minor injuries are as much within the province of the veterinary officer as major ones.

"If a stable sergeant is to be equipped for this treatment there is no limit to the scope of his pseudo-professional activities, and, it should be noted, he serves under the instruction of the unit commander, entirely independent of the veterinary service, which by regulation is responsible for the care of sick animals. Without doubt the stable sergeant occupies a broad field of usefulness, in which much remains to be accomplished, without taking over the treatment of injured animals. The care and hygiene of normal animals is a most important matter in which he, under the unit commander, can render most excellent service in keeping animals physically fit. No one else can do this work. It is vastly more important to keep animals well than it is to cure them after they are injured.

The Untrained Service Wasteful

"It would seem that the best and most useful development of the stable sergeant's activities would be in this direction and that time and materials spent by him in treating the sick would be worse than wasted. In conclusion, the surgeon general urgently recommended the abandonment of the proposal to issue a packet of medical supplies to line sergeants, confidently believing that the first-aid

packet to be developed and supplied every animal, together with the veterinary service now available, will meet every reasonable requirement."—Army and Navy Register.

IS HOG CHOLERA THE ONLY SERIOUS SWINE SCOURGE?

Dr. Stouder of the Extension Division of the Iowa State College was quoted as follows in an article that was recently published in "The Country Gentleman": "Ninety-five per cent of all hogs that die from disease in the United States die from hog cholera. Just get that fact across to farmers as strong as you can. All other diseases are insignificant compared with hog cholera. I have made post mortem examinations on thousands of hogs in Iowa for years and I have never found more than two or three positive cases of hemorrhagic septicemia. Let a farmer immunize his hogs against cholera, even if it does cost something and he need never worry over the few hogs he may lose from any other disease."

The statements in Dr. Stouder's quotations are misleading, but it may be that the Doctor has been misquoted as is frequently the case in such articles. If the term "hogs" includes all swine from the time of farrowing until maturity, the statement "ninety-five per cent of all hogs that die from disease in the United States die of cholera," is certainly an error. Practitioners and most state veterinary control officers will approve the statement that the greatest loss in numbers of swine occurs within six weeks after farrowing and is due to parasitism, scour, enteritis and other conditions and not to hog cholera. In certain sections of the country, the loss in numbers from cholera of swine after weaning may be 95% of the total losses or even more, but this statement is probably not true of the entire country. Ninety-five per cent of the economic loss to the swine industry of the United States is not due to hog cholera.

The fact that Dr. Stouder has only observed two or three cases of hemorrhagic septicemia in swine, although he has "made post mortem examinations on thousands of hogs" does not eliminate the possible existence of this disease in other sections of the country. The sanitary authorities in an eastern state maintain that hemorrhagic septicemia is the most important disease of swine in that state. Are the readers of "The Country Gentleman" article to assume that hog cholera and very rarely hemorrhagic septicemia are the only significant diseases of swine? Are the swine in Iowa free from necrotic enteritis and influenza or flu? If not, have these two diseases become insignificant and of no economic importance?

The quotations above referred to could not have been intended by Dr. Stouder to impress the reader with the fact that practically all diseases of swine may be assumed to be cholera and the simultaneous immunization with anti-hog cholera serum and virus would prevent all losses, although the statement "Let a farmer immunize his hogs against cholera, even if it does cost something, and he need never worry over the few hogs he may lose from any other disease" would seem to imply that there is no further need for differential diagnosis of swine diseases and therefore the services of veterinarians are no longer required.

We believe: first, that hog cholera is the most important disease of swine after weaning; second, hemorrhagic septicemia, necrotic enteritis and influenza are important economic diseases of swine; third, that the safeguarding of the swine industry requires more than the promiscuous immunization against hog cholera. Fourth, that because of the prevalence of other diseases than hog cholera, the immunization of swine should be done by those capable of making a differential diagnosis, that is, a veterinarian.—A. T. K.

IS THE MYSTERY OF PERIODIC OPTHALMIA SOLVED?

It is a well known fact that periodic opthalmia exacts a very big toll from the horse industry; which in some districts is much bigger than that of all other diseases combined; and that in spite of its disastrous influence and the wealth of investigations of which it has been the subject nothing worth while has ever been discovered about any part of its phases. In short it has until now been a profound mystery. Bacteriological studies have thus far all ended the same—in nothing.

Six years ago Drs. Augusto Bonazzi and E. Merillat of Wooster, Ohio, began a quiet, methodical study which today, judging from a preliminary report submitted to VETERINARY MEDICINE for publication promises a complete solution of the whole mystery and with it preventive and curative suggestions which are to say the least almost revolutionary in character.

The study was conducted in a region where periodic opthalmia is a scourge, where it is

rampant in the extreme and where as high as 33% of all horses are so affected. It is doubtful whether there is another region in the country better suited for the wide mesological study of the disease these authors have been able to pursue. But besides the mesologic and endemic studies which have added to the fund of facts accumulated the report includes bacteriologic, anatomo-pathologic symptomatic and therapeutic investigation and experiments which are extremely interesting and which seem conclusive.

The work seems to have eliminated systematically about everything that might be suspected as causative and closes with line of management that promises to remove the tenacles from this previously refractory affection of horses.

It will be given to readers of VETERINARY MEDICINE beginning with the May issue.

THINK IT OVER

It seems indeed unfortunate that the close relations we should by right enjoy with the live stock interest are being so badly broken by scareheads about the hazards of this or that disease of animals to the human family.

There is a gap, a wide, wide gap, between the veterinary profession and the live stock interests. These two interests have lost contact and both of them are suffering the consequence. We feel the results of the breach most because we are the weaker of the two.

Instead of becoming narrower the gap is widening more and more. It is widening because the whole profession is being drawn into an absolutely untenable position before a critical public and a critical live stock industry.

On the one hand we purport to be the champions of the stockman, and then on the other we unhesitatingly preach doctrines that incur distrust in our intentions as a profession and worse still inflict incalculable harm to the practitioner who must subsist from him despite the unfriendly relations thus created.

And all of this we do at the beck and call of a few men who seem to feel that their positions might be less secure if they did not eternally exaggerate the harmfulness of tuberculous cattle and hogs to human health, for the ostensible purpose of frightening appropriations out of the public treasuries. It is thus that the welfare of more than twelve thousand veterinarians threatens to be sacrificed at the altar of about two hundred.

The veterinarian in an official position who preaches tuberculosis eradication from the standpoint of economy, and economy alone, stands upon solid rock, and is making a position for himself and his profession that will endure; but he who tries to whip the live stock interests into supporting his programs through campaigns of frightfulness is pulling the profession into a precarious situation, a situation that is already reaping a harvest of restrictive and destructive legislation, the force of which will always be felt most by those struggling to make a living by general practice.

What the profession seems to need today to stem the tide that is leading it over the unsafe grounds that now threaten to swallow it up is a great big solid organization of veterinarians for veterinarians that will champion the cause of the majority and study the problems of the many and not of the few, an organization of the twelve thousand who are traveling the country roads to administer to the wants of the farmer at so much per call,—an organization that will re-establish the lost contact between client and practitioner, an organization that will go to legislatures with the stockman for mutual benefits—an organization that will build up the field of veterinary practice after its own ideals—in short an organization for veterinary practitioners that will mind its own business and protect itself against ulterior exploitation.

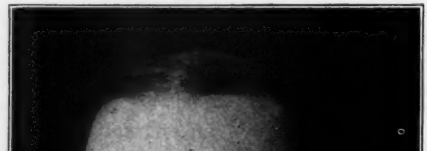
The A. M. A. Journal, Vol. 78, No. 9. The physicians' protective association of Buffalo are protesting against free medical service for the public. They recently passed the following resolution:

"We believe that the time has arrived for an accounting, and that widespread and unnecessary pauperization in the form of medical aid should cease. Abuses are tolerated under the mask of public health, and should be ruthlessly exposed. There is no greater menace than the creation of a vast, willingly dependent class, and it concerns the public more than the medical profession. We are tired of the burden forced upon our profession, and weary of interference and attempted dictation of a class of salaried workers whose livelihood depends so largely on the inflation of the number in the army of fraudulent dependents."

Our Accolade

MISSOURI has a new state veterinarian. His name is Wilson—Dr. H. A. Wilson of Malta Bend. Earlier, one would have addressed him Lieutenant H. A. Wilson, U.S.A., A.P.O., 823, A.E.F., France.

In making up a biographical sketch of Wilson one encounters some mighty formidable captions: Seventh Field Artillery, March, April, May and June, 1918, First Division; One Hundred and Thirty-Third Field Artillery, Thirty-Third Division, September, October and November, 1918; Mondidier, Verdun, Argonne, Gondrecourt, Thierville, Dead Man's Hill, Breuille, etc. These names make the writing of a short biography easy since these organizations at the places and between the dates indicated wrote many a glorious page into American history and Wilson was there to help write it.



DR. H. A. WILSON
Jefferson City, Mo., State Veterinarian

To have been an officer in the Seventh Field Artillery during its operations before Mondidier is quite enough glory for one man; to have served with the Thirty-Third Division along the Meuse north of Verdun during October, 1918, was enough to have made Sherman blush for having been so modest in expressing his conception of what war really is. Wilson served with the Thirty-Third Division from July until the armistice was signed.

After that date, like all peace loving civilian soldiers, his military record is that of a yearning for home and native sod where he arrived February, 1919, and was discharged a month later.

He reentered the practice of his profession at Malta Bend where he remained until decorated as state veterinarian, February 1, 1922.

The job of state veterinarian of Missouri is a big job; it was made big by a big man—D. F. Luckey—after more than twenty years of hard knocks against obstacles that are best understood by those who have occupied such positions since the pioneer days of live stock, sanitary science and police in this country during the evolution of our present animal husbandry.

But, although the work of the pioneer is admittedly a very hard one, fraught with the difficulties of blazing new and uncertain trails, that of continuing a labor well begun is also an arduous task, fraught with the difficulties of keeping the pace of a capable predecessor.

A man, however, who has acquited himself well as a practitioner at his own home; one who has served his country with credit in such an old, disciplined military organization as the Seventh Field Artillery through trying days; one who is mayor of his home city and master of his local Masonic Lodge; and one who enters office with a determination to work, to please, to confer with his colleagues and to assume the role of servant rather than commander, may be trusted to render a good and lasting service to the state that drew its sword and touched him with the accolade of distinction.

No man is greater than the estimate placed upon him where he is best known; and it is always safe to confide in testimonials expressed, not in words, but implied in the deeds of close acquaintances.

Missouri is in safe hands, and the veterinary profession is pleased that it chose wisely and well in filling a position made famous by nearly a quarter of a century of achievement in live stock sanitation.

Editor's Personal Page

When honesty is only policy it isn't much to brag about.

A hobby is always a pleasure and if properly ridden it can often be turned into a profitable enterprise.

Confidence is a cardinal prerequisite of profitable business, confidence of the buyer in the seller, and back of confidence is reliability.

Ability is the result of a disciplined mind—the training of the intellect, but ability without reliability only makes a gifted criminal.

It is easier to lose than to hold a client. Lost through unreliability, he is lost forever, through misfortune he will return because no one has a monopoly on luck.

Don't be the cheapest man in your neighborhood if you want to be thought of as the best veterinarian. As regards harmfulness, undercharging and overcharging belong in the same rank.

The veterinary practitioner is ex-officio a good and successful stockman. His knowledge of animal diseases gives him a big advantage over those who know less about the pitfalls of the breeding industry.

Oh, yes, commercialism does hurt the profession. It is probable, however, that it is our own commercialism that hurts most. We must leave the old-time days to the memory and banish the thought that we have anything to sell by the yard.

A practitioner is not "in right" until he can safely acknowledge that he does not know what is the matter with a case, suggest helpful treatment, and postpone the diagnosis until the next call, without inviting criticism for the apparent shortcomings. This is always much better than a snap diagnosis that will require revision at the next call.

Make your word as good as your bond and keep both above par.

The only cause of hard times is spending more than is earned.

Beware of the misanthropic motives of the self-named philanthropist who operates from the house tops.

If the written and implied code that prohibits the exploitation of secret medicines were enforced. Gee!

The clinic of the Missouri Valley Veterinary Medical Association almost won the distinction of being the first horseless clinic in its history when at the last moment a subject belonging to this domestic species was "run in" on the awe-stricken audience.

Charles J. Frey, D.V.S., Silver Spring, Md., says: "The paternalistic tactics that have been employed by the federal government tend to destruction rather than construction of the whole veterinary profession.

"Where ignorance is bliss, 'tis folly to be wise."

Just as soon as we are big enough to extricate ourselves from the false position into which we are being drawn by a few who, entirely unsolicited, assume the role of watchdogs of the public health, the sooner we practitioners will be able to again array ourselves side by side with our clients.

There are, after all, two separate branches of the veterinary profession with clashing interests. The one is composed of all the practitioners and all of the sanitarians who restrict their activities to the health of live stock. The second branch is composed of the half-trained watch dogs of the public health who studiously try to scare the public away from animal products as food. Don't let this second branch "sic you on." It hurts the profession.

Purely Practical

IN LIEU of the usual mechanical methods, Williams recommends hypodermic injections of pituitin (2 cc to 5 cc) to prevent the uterus from being re-expelled after reposition.

Do not overlook Bryonia (Lloyd Bros.) in the treatment of pneumonia and pleuritis in the dog.—Reed.

Equal parts of weight of phenol-gum camphor and chloral hydrate triturated together until liquefaction occurs is a valuable application for painful wounds.—Reed.

Lighting a fine grain hexamethylenamin tablet affords a quick and easy way to produce a flame to heat a spoonful of water for a hypodermic solution, or to render the needle sterile by passing it through the flame produced. Try it.—Reed.

By placing the fingers in one horn, the thumb in the other and then pressing gently forward an inverted uterus will return in 100% of the cases, just as if it were a sack turned wrong side out.—Long.

Among the different enterprises the veterinarian is particularly qualified to undertake with profit and pleasure and to keep the mind from worrying over a declining income are: 1. The bee industry; 2, the poultry industry; 3, the fox industry; 4. the wild fowl industry; and 5. the dog industry.

Veterinary practice and farming do not make a good combination for the veterinarian. The one distracts from the successful pursuit of the other because each one requires a too close attention to detail to assure success, and because calls can only be made at the expense of the farm operations which in turn makes for neglect of the veterinary practice.

To cure foot-rot in cows Ferguson recommends: phenol, five parts; formalin, three parts, and water 100 parts. Apply cotton wads between the claws and around the coronet and hold them in place with a good bandage, and keep the dressing well soaked with the above mixture in the proportions of two ounces to a pint of water.

For metritis I impregnate liquid petrolatum and icthyol with 2 per cent of iodine by heating. I allow this to remain in the uterus for several days and then irrigate and repeat.—Ober.

One of the troubles with bacterian treatments is probably due to the fact that practitioners have expected too much from a single dose.

A single dose of bacterin is not always sufficient. Under-dosing is often the cause of failure to get the best results.

Every practitioner knows something that others do not. It would be a precious privilege to have access to a reservoir containing all of this knowledge.

A good way to remove warts is to pinch them off with a pair of rather dull pincers. The common horse-shoer's pincers will answer.

"Dentistry is a branch of veterinary science that should not be neglected, as the teeth play an important role in preserving the health of animals," writes an Oklahoma colleague. "It prevents waste of feeds, improves the general appearance, aids digestion and keeps the eyes brighter," he says.

Finely sifted hard-wood ashes is a good dusting powder for lice in cows, horses or dogs. The ashes should be dusted into the hair and then brushed out the next day. For chickens the ashes are placed in a box to which the chickens have access for self dusting.

The information furnished by a paper prepared by Dr. P. H. Fulstow of Norwalk, Ohio, for the information of the members of the Northwestern Ohio Veterinary Medical Association on the average income of veterinarians, details of which will be published in a future issue, shows clearly that the veterinarian is not as unfortunate from the business standpoint as other lines of industry. Many an enterprise in this country has cheerfully "written off" great losses during the last two years and we, like the rest, must be good sports and bear ours with the same good humor and fortitude.

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

The Tucking Operation for Ventral Hernia

SEVERAL years ago while performing some surgical operations at the veterinary hospital of Dr. A. F. Schrage at St. Cloud, Wisconsin, among the cases presented was a very remarkable one of ventral hernia in a mare—remarkable because of the great size and because it was bilateral.

Resembled Rupture of the Prepubian Tendon

The mare was a middle aged, black Percheron, weighing about 1,400 pounds and in fair condition of flesh. She was badly deformed with two, enormous bulgings at each flank. The case resembled one of rupture of the prepubian tendon except for the fact that the protrusion was more lateral than ventral as in the case of dropping of the abdominal walls from the weight of a heavy fetus when the attachment of the prepubian tendon gives way at the pubis. A casual examination, however, soon revealed that this was not the case. The linea alba divided the protruding mass into two equal parts, between which it was deeply embedded. The two halves give the appearance of being "cut in two" by the linea alba and almost touched each other ventrally.

Diagnosis: Two Ventral Hernias of Enormous Size

The size of each was enormous, closely approaching that of large wash tubs, protruding from the regions of the flanks and making the patient a very poor surgical prospect. Intervention at first seemed like an insane act in view of past experiences with large ventral hernias of horses operated upon by the usual open method.

The hernias were of several years duration having become gradually larger until finally incapacitating the mare for any kind of ordinary work. No authentic history as to the cause was obtainable.

On palpation of the sac it was found to be composed of a thick layer of hypertrophied peritoneum internally and of normal skin externally.

The orifice, the edges of which could be traced indistinctly, extended from the vasti muscles posteriorly to the costal margin anteriorly and then traced a course downward and backward over the abdomen, striking the linea alba about eighteen inches behind the xyphoid cartilage, whence it followed the linea alba straight back to the brim of the pubis. Its course from the pubis upward could not be traced on account of the margin being lost in the volume of the mass. It seems likely, however, that Poupart's ligament was its posterior boundary.

Both sides were about the same as regards the boundary of the orifice, volume of the sacs and thickness of the peritoneal layer. They were entirely too heavy to manipulate for visceral adhesions.

Prepared for Operation

Despite the unfavorable prospects of the case it was decided to make an attempt, the owner having consented to take the small chance there was to effect a cure.

Although the mare had been walked a considerable distance and was quite empty it was thought best to postpone the operation to lighten the weight of the intestinal contents by a fast of 24 hours. In the interim the parts were clipped, shaved and given a preliminary disinfection, as much to shorten the duration of the operation as to effect the best disinfection possible for so large a surface and for an operation of such magnitude.

Narrative of the Operation

On the following day the mare was secured on the operating table, anesthetised with chloroform, after having received a preliminary anesthetic of chloral 20 minutes before. The following procedure was carried out:

1. An incision was made through the skin following the whole longitudinal axis of the sac. It was more than two feet long.

2. The skin was separated from the sac throughout its whole extent, as far down as the linea alba and right up to the margin of the orifice in all the other directions, except backwards where the peritoneum seemed to be too thin to justify transgression.

3. The sac, which on being thus exposed

proved to be an inch or more in thickness, was then tucked inward in two regular, longitudinal pleats which were held in place with interrupted sutures here and there, preparatory to suturing them permanently with a continuous suture, running the entire length of the pleat, that is from the anterior margin of the orifice near the costal border back to the region of Poupart's ligament. The suture material used was a double strand of strong linen saddler's thread. In suturing care was taken not to pass the needle into the abdomen. Let us understand. The sac was folded in and held there by a continuous suture running along the crease thus produced. This produced a heaped up double fold of smooth endothelieal lined peritoneum internally and a crease held shut with sutures externally, all of which served as a veritable sill to support the weight of the viscera. The idea was to hold the fold up with sutures while adhesions were forming to serve the same purpose in permanence.

4. The skin was sutured with a continuous suture of the same material. This was done in a rather slipshod manner on account of the haste that seemed now to be necessary to bring a long, drawn out operation to a close. The animal had been under the anesthetic more than an hour which in such operations is near the dead line.

5. While reviving from the anesthetic a strong muslin wrap was slipped around the body and sewed up as tight as possible.

There was no thought of operating upon both sides at this time because repositioning of an anesthetised patient is impossible on an ordinary operating table even if a continuation of the anesthesia were safe.

The Outcome a Surprise

The wound healed without any serious complications, although fistulous tracts developed here and there on account of the large amount of non-absorbable suture material incarcerated beneath the skin. In about five weeks it was apparent that the hernia on the operated side was cured—cured permanently—which time proved to be the case.

As the total cost of an expensive operation and a long sojourn in the hospital discouraged the owner against a second operation the case was abandoned.

The rest of the narrative is unconfirmed hearsay. The mare is said to have fallen into the hands of a veterinarian who repeated the operation on the opposite with equally good results.

Subsequent Experiments Successful

Beginning with this unique case and especially with these unexpected results the tucking method of lifting ventral hernias into the abdominal cavity was practiced as a routine measure on a large number of similar cases.

It has been found that the operation is not successful except in old cases in which the peritoneum is intact and has had time enough to become hypertrophied. The peritoneum of a recent case is too thin to make a good support even after it has been folded in, except in a hernia with very small orifice.

It is likewise of no service where the peritoneum has been divided with the causative violence since in this case the omentum and even the intestines are located subcutaneously. There is only one layer—the skin—and to this viscera are adhered. Such a case is incurable and always a surgical hazard.

On the other hand the operation is a com-

Figure 1

plete success and remarkably simple and harmless in the average and small ventral hernias of considerable duration, when on palpation it is found that the inner layer of the sac is composed of a good strong peritoneum which can be made use of to plug the orifice or construct a new floor over it.

In an operation performed in the practice of Dr. W. Lester Hollister, of Avon, Illinois, several years ago the futility of operating upon a ventral hernia with a thin peritoneum was shown. Hollister's case was a pure-bred Percheron mare three years old with a ventral hernia the size of a twelve quart pail located midway between the costal border and the stifle. In operating on this animal the peritoneum was found to be thin—very thin, in

fact so delicate and transluscent that the intestines could be seen through it. After the tucking operation had been performed there was a period during which it seemed to have been successful, but later this delicate support gradually gave way, leaving the hernia sag down again to its original dimensions.

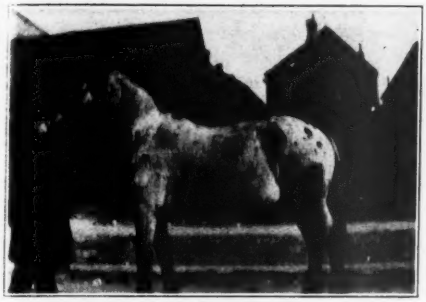


Figure 2

Illustrating a Recent Case

The case, photographs of which are reproduced herewith, is a recent ventral hernia that would not as yet be regarded as a safe surgical subject but which would after several months become operable. It is, however, an interesting one at this stage because the true character of the injury was difficult to estimate at the onset, as is so often the case with recent abdominal traumas. What may seem like a simple contusion today may prove to be a serious ventral hernia some days later. When complicated with hematoma or serous sac the exact nature of the bulging may remain masked for two weeks or more.

Figure 1 reproduces a photograph taken the fifth day after the accident, which consisted of a glancing blow from the fender of a swift moving automobile. At this time the symptoms were that of a thick, diffused ventral edema, extending forward almost to the fore legs and across the medial line to the opposite side. There was only a slight fluctuation at a small zone just beneath the point of contact with the fender—about two inches in diameter. Hernia was, however, suspected on account of periodic colicky pains the patient manifested from time to time during the first few days following the accident.

Figure 2 was taken at the end of ten days. The edema was gradually diminishing and the area of fluctuation was enlarging. Yet at this time it was not possible to determine by palpation whether hernia actually existed or not. Deep palpation was too painful and there was still too much accumulated serum in the sac and too much inflammatory swelling and edema to either locate or exclude an orifice. It was, however, becoming plain that hernia existed.

Figure 3 which shows the developments at the end of three weeks is a splendid reproduction of unmistakable ventral hernia, projecting sharply from the flank. At this stage the case was easy to diagnose. The pain had subsided, the edema was all absorbed and the orifice could be felt on deep pressure.

These three figures graphically portray the typical evolution of abdominal injuries which puzzle the best practitioners at first but which later develop the differentiating syndrome between hernia and serous or sanguinous collections. The photographs were supplied through the courtesy of Dr. C. O. Kroener, Chicago, Illinois, in whose practice the case occurred.

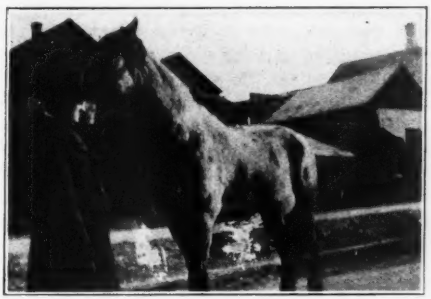


Figure 3

Farmers Meet with Veterinarians

We quote the Triumph (Minn.) Progress: This meeting was well attended and some heated discussions were heard. At the present time only about one-fourth of the hogs in this county were vaccinated last year and many of them too late. As a result there was considerable loss from cholera. It is proposed to get the serum wholesale and arrange the vaccinating so that the veterinarian can do his work cheaper and still realize more from his labor than he does now and at the same time cut the cost of vaccinating to about one-half what it is now. This will give every one a chance to vaccinate and hog cholera losses will be a thing of the past. This item one year with another means thousands of dollars to every community.

Minerals for Livestock

By F. B. Hadley, D. V. M., University of Wisconsin, Madison

VETERINARIANS should be particularly interested in the subject of minerals in the livestock ration especially because it is being much discussed by farmers, due to the prominence given to it by the agricultural press. Naturally conflicting views exist about the importance of minerals and the kinds needed to maintain animals at their highest efficiency. In this paper an effort will be made to summarize what is known about the subject.

Need of Minerals Not Questioned

There is no doubt that minerals have a very important place in the ration of farm animals. This is shown by the fact that experimental animals die sooner on a ration containing no minerals than when all food is withheld. All young animals require these elements for growth; older female animals need them to make up the shortage produced as a result of bearing young and to replace those secreted in the milk.

Normally the kidneys do not allow any sugar to pass out with the urine. When some sodium chlorid solution of the same strength as the salt content of blood itself is injected into the veins a curious effect is observed. The kidneys become unable to hold back the sugar in the blood, so it filters through them and escapes in the urine. If, however, there is added to the sodium chloride solution some calcium, magnesium, and potassium salts as found in blood, large amounts of the solution can be introduced into the blood stream without causing any disturbance in the function of the kidneys whatsoever. It is not known why this is, but it has been observed many times, so physiologists have given the term "balanced salt solution" to that solution necessary for the proper functioning of the living tissues. This experiment clearly demonstrates that mineral elements are essential to the animal mechanism.

Investigation has shown that the one mineral substance above all others required by animals to maintain health is sodium chlorid. Every feeder of livestock knows that hays, grains, and other natural feeds do not contain enough common salt for the needs of animals, so he provides it, knowing full well the bad results that would follow unless he does so.

Timothy and Blue Grass Hays Low in Calcium Content

So far as is now known all other minerals needed by the animal are secured by it in sufficient quantities from the feed, even if the latter is quite restricted in character. There is a possibility, however, that calcium (lime) may be lacking, especially in those sections where the soil is low in this substance, and acid in reaction, for plants grown upon lime-deficient soil are relatively low in their lime content, as is also the drinking water. Both timothy and blue grass hays are low in cal-

Missouri Valley Medical Veterinary Association

cium, especially if grown on acid soil. On the other hand, legumes (clover and alfalfa) and certain feeds of animal origin (tankage and skimmed milk) are rich in lime and contain an adequate supply for the needs of the animal body.

It is fortunate indeed that green plants contain a relatively high percentage of calcium, as this means that when animals have access to pasture for several months each year they will get along on less lime in their ration during the winter months, when the feed is most likely to be low in lime content.

Phosphorus an Essential Constituent

Phosphorus is another essential mineral constituent of the body, as has been shown by Dr. Forbes of the Ohio Agricultural Experiment Station, who states that structurally it is important as a constituent of every cell nucleus and of all cellular structures; it is also prominent in the skeleton, in milk, in sexual elements, glandular tissue, and in the nervous system.

Functionally, phosphorus is involved in all cell multiplication, in the activation and control of enzyme actions, in the maintenance of neutrality in the organism, in the control of nerve stimuli, and through its relation to ozmotic pressure, surface tension, and inhibition of water by colloids it has to do with the movement of liquids, with the proper liquid contents of the tissues, with cell movements, and with absorption and secretion.

Fortunately phosphorus is not nearly so likely to be lacking as are the other mineral substances already mentioned, because grains, tankage and skimmed milk contain enough for the needs of our animals most of which are fed at least one of these feeds.

Cows Store Up Calcium and Phosphorus in the Bones

It has been demonstrated that a cow will draw calcium and phosphorus from the store in her bones to the extent of 25 per cent of the total amount contained therein if there is a deficiency in her ration. When dry or producing less than 10 pounds of milk per day, the cow starts to store up a supply of these elements in the skeletal system. We should take cognizance of this fact and feed her liberally during this period on a ration which would make it possible for her to assimilate liberal quantities of both these elements.

While it is possible to produce premature and weak offspring in experimental animals by withholding calcium or by feeding fodders low in mineral matter, it seems improbable that under ordinary farm conditions these disasters occur from this cause. This is because the ration is not restricted in the manner mentioned throughout the year, since there are four months or more during which the stock is on pasture when they have opportunity to replenish their depleted stores of minerals. We are convinced that many stockmen are deluding themselves into believing that abortions are due to deficiencies in the ration, when, as a matter of fact, most of the cases are caused by infection with the abortion bacillus of Bang.

Complex Salt Compounds Superfluous

For many years, but more especially recently, the manufacturers of various stock salts, mineral mixtures and similar patented

Kansas City, Mo., Jan. 31-Feb. 2, 1922

preparations have advertised their preparations to contain one, more or all of the following substances: glauber's salts, epsom salts, iron sulphate, copper sulphate, and charcoal. They have succeeded so well in their efforts to impress upon the public the value of these substances that stockmen have come to believe them essential for the welfare of animals. Now as a matter of fact, there is no evidence to show that any one of them is of value to a healthy animal. Since none of these substances contain any one of the essential mineral elements previously mentioned, it is not reasonable attribute any worth of them. It would be much more economical to purchase any extra minerals needed by livestock separately and mix them with the feed, than to purchase and use these complex salt mixtures.

A satisfactory and adequate salt mixture

(Continued on Page 200)

Prevention and Control of Tuberculosis*

By Dr. A. T. Kinsley

TUBERCULOSIS is a specific infective disease caused by the tubercle bacillus. This disease affects practically all warm-blooded animals, including man. Cattle, swine and poultry are more susceptible and consequently more frequently affected with tuberculosis than other farm animals, although an occasional case of tuberculosis has been reported in the horse, sheep and goat. Tuberculosis of farm animals is more or less prevalent in all sections of the country. Bovine tuberculosis is most prevalent in dairy cattle of the older states. The extent of bovine tuberculosis varies from ½% to 1% in some of our western states to from 5 to 30% in some of the eastern states. These estimates are based upon the findings in tuberculin testing and inspection in abattoirs.

Porcine tuberculosis is most prevalent in those sections in which swine are fed by the by-products of the dairy cow. The percentage of tuberculosis in swine as indicated by inspection in abattoirs has been increasing at an alarming rate and was recently reported to be approximately 12%, of all swine slaughtered at official establishments during the fiscal year ending June 30th, 1921.

Avian tuberculosis, according to the available reports is not as generally distributed as tuberculosis of cattle and swine. Tuberculosis of fowls is most common in the central northern states, although the disease has been reported to be more or less prevalent in some of the Pacific states. The extent and distribution of this disease combined with the fact that at least three different groups of farm animals are subject to its ravages complicates the problems of control. The relation of tuberculosis of farm animals and tuberculosis of the human, although it is not excluded in the subject assigned, will not be discussed.

Control Depends on a Comprehensive Knowledge of the Disease

In order to fully recognize the significance of preventive and control measures of tuberculosis or other infective diseases, there should be a comprehension not only of the extent of the disease but also of the transmission of the disease from animal to animal of the same species and the intertransmission from an animal of one species to an animal of another species.

In the control of an infectious disease it is essential to have a comprehensive knowledge of the cause of the disease, source of infection, channels through which the infection may successfully gain entrance into the susceptible animal and the avenues through which the infection is eliminated from the diseased animal.

The types, morphology, staining reactions, and cultural requirements of the tubercle B., particularly concerns the laboratory technician. The vitality and resistance of the tubercle B. are the properties of this microbian agent that concerns the sanitarian. Generally speaking, the vegatative form of bacteria are not difficult to destroy but the tubercle B. is said to possess a protecting substance or envelop that protects it against the ordinary injurious influences. It is therefore necessary to assume that the tubercle B. is not easily destroyed and that measures adopted for the prevention and control of this disease should take this fact into consideration.

The Source of Tuberculous Infection Significant

A knowledge of the source of tuberculous

infection is indispensable in the prevention of the spread of tuberculosis. The origin of the first tubercle B. is not known and is of little consequence. The important problem is the present-day source of tubercule B. The primary source of the tubercle B. is the tuberculous animal. Tuberculosis may be characterized by either closed or open lesions. A closed lesion is one that is definitely enclosed usually by means of a capsule and the tubercle B. are retained within the circumscribed area. An open tubercular lesion is one in which there is no definite circumscription and the products of the tuberculous process including the tubercle B., are or may be disseminated in the body or be discharged from the body. Closed lesions may become open lesions and open lesions may become circumscribed and it therefore seems justifiable to consider all tuberculous animals as possible spreaders because of the uncertainty of the character of the lesions.

The avenues through which the tubercle B. are eliminated from a tuberculous animal will depend, to some extent at least, upon the location of the lesions. Thus it has been demonstrated that tubercle B. may be eliminated from tuberculous cattle in the discharges from the nose, digestive tube, urino-genital organs and udder. From the evidence now available it would appear that tubercle B. are rarely eliminated from the bodies of tuberculous swine excepting in a few instances in which suckling pigs became infected by the milk from sows affected with mammary tuberculosis. Avian tubercle B. are usually eliminated from the tubercular fowl in the feces. In those cases in which there are open lesions of tubercular arthritis in fowls or other animals the tubercle B. will be eliminated in the discharge from the joint. The carcass of a tubercular animal contains tubercle B. and unless properly disposed of, is a source of infection. The infective discharges of tubercular humans may be a source of infection of farm animals although this source is of little significance with the possible exception of swine.

The primary or direct sources of tuberculous infection are:

1. Infected discharges of a tuberculous animal.

2. The carcass of a tuberculous animal.

The secondary or indirect sources of tuberculous infection are air, soil, food stuff, water and equipment that have been contaminated with infected discharges used in feeding, watering, housing and transportation of animals.

Susceptibility a Factor

Another factor that should be taken into account in the prevention and control of tuberculosis of farm animals is the relative susceptibility of the different species of animals to the infection from other species of animals. Most bacteriologists agree that there are at least three rather distinct types of tubercle bacilli and they designate them as the human, bovine, and avian types. Thus it is noted that there is no distinct type of tubercle B. that affects swine. Tuberculosis in swine is almost entirely due to infection with bovine tubercle B.

It has been estimated that from 96% to 100% of tuberculosis in fowls is due to infection with the avian tubercle B. The infection of swine or cattle with avian tubercle B. may occur but probably is not of much consequence unless the cutaneous tubercular lesions of cattle are of avian origin. An occasional case of porcine and avian tuberculosis may be the result of infection with the human type of tubercle B.

Portals of Entrance

The channels of entrance of the tubercle B. into an animal body are: 1. The digestive tract. 2. The respiratory tract. 3. The uro-genital tract. 4. Abrasions in the skin.

The digestive tract is the most frequent channel of entrance of the tubercle B. in cattle, swine and poultry. An occasional case of pulmonary infection may occur in cattle, but is extremely rare in swine and poultry. Uro-genital infection occurs rather frequently in cattle and may occur in swine but the available literature does not contain reports of this form of infection in fowls, however, tubercle bacilli may occur in the egg. Cutaneous infection occurs in cattle, swine and fowls.

The usual source of tuberculosis in cattle is first tuberculous cattle; 2nd, infected milk or other dairy products; 3rd, infected barns, yards, pastures, cars, public stock yards, exhibition buildings and their equipment.

Tuberculosis in swine is due primarily to infection obtained by first following tuberculous cattle; 2nd, feeding upon infected milk or other dairy products; 3rd, consuming the carcasses of tuberculous animals and uncooked garbage.

Avian tuberculous infection is obtained by contact or the consumption of infected excretions.

Practical Points On Its Control

In controlling tuberculosis and the prevention of reinfection it is of paramount importance to thoroughly clean and disinfect infected premises. Many instances of infection of healthy animals have been traced to premises

from which reacting animals had been removed but the barns, lots and equipment had not been properly cleaned and disinfected. In some cases the efforts of disinfection have been fairly good but the proper cleaning had not preceded the application of the disinfectant and infection still persisted. Cleaning is fully as important as disinfection. All trash and rubbish should be removed and burned. Mangers, feed boxes and walls should be thoroughly scrubbed. Board floors should be torn up and burned. Concrete floors should be scrubbed and dirt floors thoroughly saturated with disinfectants. All trash should be removed from outside racks, feed and salt troughs before applying disinfectants.

From the foregoing, it is evident that tuberculosis can be controlled in (a) cattle by:

1. Tuberculin testing of all cattle. When reactors are found they should be properly disposed of and the premises cleaned and disinfected. In herds in which a large percentage of tuberculous reactors are found, it is advisable to salvage the entire herd excepting the pure-bred and very valuable breeding animals, which if conditions are favorable may be handled by the Bang system.

2. Cattle for breeding purposes or even feeders should be bought subject to the tuberculin test.

3. Using foods for calves or older cattle that are known to be free from tuberculous infection.

4. Disinfecting barns, cars, yards or equipment.

(b) Swine by:

1. Pasteurization of milk or its products used as hog feed.

2. Cooking of garbage.

3. Allowing them to follow only cattle that are tuberculosis free.

(c) Poultry:

1. Tuberculin testing and removing reactors. In case a large percentage of the fowls are tuberculous, disposition should be made of the entire flock.

2. Cleaning and disinfection of chicken house and yards.

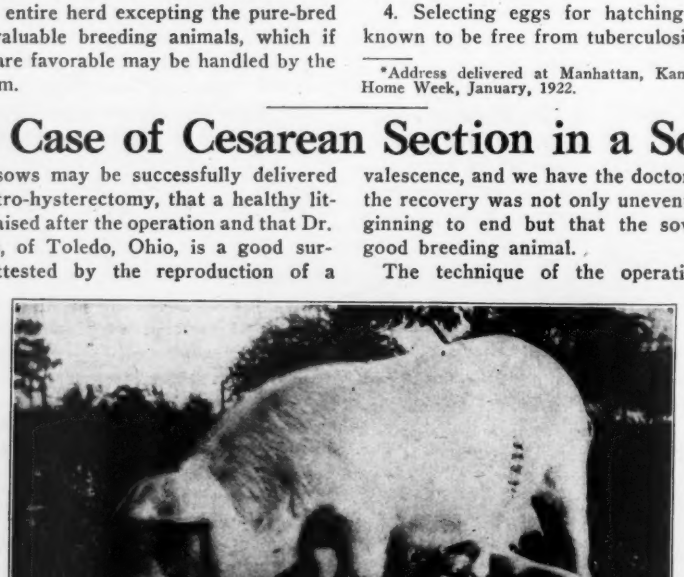
3. Guarding against the feeding of infected foods.

4. Selecting eggs for hatching from flocks known to be free from tuberculosis.

*Address delivered at Manhattan, Kansas, Farm and Home Week, January, 1922.

A Case of Cesarean Section in a Sow

THAT sows may be successfully delivered by gastro-hysterectomy, that a healthy litter can be raised after the operation and that Dr. C. W. Sass, of Toledo, Ohio, is a good surgeon is attested by the reproduction of a photo of a sow and pigs taken some four days after such an operation had been performed.



The figure also shows that the patients are doing well even at this critical moment of convalescence, and we have the doctor's word that the recovery was not only uneventful from beginning to end but that the sow remains a good breeding animal.

The technique of the operation was the usual routine: asepsis, well disinfected field, flank incision, removal of the pigs from a single hysterotomy, removal of the placenta, Lemnart sutures for the uterus and interrupted sutures for the abdominal walls.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

The Fallopian Tubes

(Salpingitis—Hydrosalpinx—Atresia)

THE Fallopian tube is a short tortuous canal lodged in the broad ligament near its anterior border. It commences at the ovary by a free expanded extremity (the pavilion of the tube or ostium abdominale), and terminates in the cul-de-sac of the uterine cornu by opening into it—the ostium uterinum.

It is composed of three coats—the mucous, muscular and serous. The outer coat is obtained from the peritoneum. The mucous coat is lined by columnar epithelinum provided with cilia. The ciliary motion is directed toward the uterus.

The muscular wall of the oviduct is formed by two layers of small muscles, an inner circular and an outer longitudinal.

The orifice of the uterine extremity opens in a small and very hard tubercle. The ovarian extremity, in all mammilia, offers a very remarkable arrangement. It opens into the peritoneal cavity, near the fissure of the ovary, and in the center of the expansion named the pavilion of the tube, which is also designated the fimbriated extremity. This pavilion is attached to the external side of the ovary, and has a very irregular outline—notched, as it is, into several lancet-shaped, unequal prolongations (fimbriae), which float freely in the abdomen. Here are, then, two important anatomical facts (the discontinuity between a gland and its excretory duct, and the communication of a serous cavity with the exterior).

The Hardest of Soft Tissues

The fallopian tube is perhaps the hardest of the so-called soft structures of the animal body. When rolled between the fingers it simulates very much the feeling of cartilage. Its function is to seize the ovum expelled from the Graafian vesicle and carry it to the uterus.

It is, therefore, necessary that, at the moment of rupture of the vesicle, the fimbriae should be applied to the ovary in order to receive the germ and bring it to the abdominal orifice of the tube. The application of the pavilion to the ovary is brought about, either by the contraction of the muscular fibres it contains, or through the distension of the bulb of the ovary. Sometimes this mechanism is insufficient, and the ovum falls into the abdominal cavity, becomes fixed there, and is developed if it has been previously fecundated; this occurrence constitutes the most remarkable variety of extra-uterine gestation.

The oviduct also conveys the seminal fluid of the male to the ovum. It is generally supposed that fecundation of the ovum usually takes place in the oviduct.

Fallopian Troubles Can Be Detected

Undiagnosable disease of the fallopian tubes is said, by some writers, to be a rather common condition in the bovine. In other words, pathological changes, sufficient to cause sterility, may frequently occur in the tubes and not be detectible by palpitation. Clinical experience, however, leads me to state that such has not been the case in the herds that I have worked in. Not that I claim to be able to diagnose minute pathological changes of the tubes, but rather from the fact that where nothing abnormal is detectible by examination or repeated examinations I have seen many animals that continue to be sterile. True it is that every operator occasionally examines an animal that is not breeding and in which no severe pathological conditions are determinable.

For instance, we not infrequently find animals that are not ovulating regularly or if they are ovulating fairly regularly that all organs seem in reasonably good condition with the possible exception that the ovaries seem too small or too soft, or too hard, or possibly a very small corpus luteum is found indicating lack of tone of the ovary. Or again, when examining animals with an unfavorable history, we find no evidence, whatever, of the right ovary having functioned. If in such cases we disregard these minor ovarian con-

ditions and turn to laboratory reports, the latter might lead one to suspect an obscure infection of the fallopian tubes and such a probable diagnosis is entirely reasonable. But in an overwhelming majority of such cases ones suspicions will probably prove erroneous if the ovaries are given regular massaging. Metabolism seems to be improved and the ovary softens or increases in size as the case may be, and shortly we find the animal having regular periods of estrum, followed by a well-formed corpus luteum and later conception.

It is likewise generally known now among those who give special attention to sterility that the disease of the tubes is occasionally associated with cervicitis. Naturally, we therefore examine with great care the tubes whenever we are in the presence of a case of cervicitis. Here again we find that cervicitis, if successfully treated until the cervix becomes apparently normal, the animal may not conceive at once and obscure disease of the tubes may be suspected. However, we must reckon with the fact that when the cervix or uterus becomes apparently normal to the touch after being diseased, it does not follow that it is at once histologically normal.

Consequently, patience with such cases and no haste to breed the animal after they are apparently normal, say for two or three months, is very apt in most cases to upset our suspicions of tubular trouble as we not infrequently find the animal later conceives after one or two services.

An Illustration

Not long since I had a case that typifies this condition. I was called in consultation to see a pure-bred Guernsey cow that the local veterinarian had been treating for more than a year for cervicitis by douching the uterus at different intervals with a 2% Lugol solution. The history was that the cow had probably suffered catarrh of the uterus and cervicitis for about three years, but owing to her valuable blood lines and unusual conformation and production, the owner did not wish to have her destroyed if there was any possibility of recovery.

I advised metritis bacterins; daily douching of the cervix only with a very warm saline solution; cauterizing of the cervix by swabbing it with tincture of iodine, to be repeated as often as seemed necessary, about every two weeks, and when improved to begin massaging the uterus (which was soft and flabby) about every week. In about there months I was called again to see the same animal. The veterinarian advised me that the inflammation of the cervix had subsided almost at once under this treatment and so far as he could see had been entirely normal for about a month, and that the animal had been bred but did not conceive.

I examined the uterus and cervix and found that the veterinarian's report of conditions was correct. He had been reading of the number of cases of tubular trouble exhibiting no gross lesions during life and had gained the impression that this cow was such an example. The tubes so far as palpitation revealed, were not in the least enlarged or adherent. I suggested that the douching of the vagina with hot solution be continued and that a couple of heat periods be allowed to pass without breeding the animal. This was done and she was bred on the fourth heat period, conceived at once and is now heavy with calf.

Repeated experiences of this character have given me more faith in the possibility of diagnosing at least the majority of serious affections of the tubes. In doing sterility work it is a good custom to examine the tubes first when introducing the hand into the rectum, that is, before the hands become cramped and tired and so lessen the accuracy of touch. To examine the tubes with ease and accuracy, the practice of having the animals fasted or at least all roughage kept from them for twelve hours prior to examination is of tremendous advantage.

If this is done and the animal's back kept down so that she does not strain and throw the abdominal viscera back against the pelvic cavity, the examination of a fallopian tube is as easily made as it hangs in the living nimal as it would be lying before one on a table post mortem.

How to Palpate the Fallopian Tubes

After we tip up the uterus in the pelvic cavity and pass the hand around to the right or left to locate the ovary, the ovary is then passed to the hand in the vagina. The tube will be felt hanging in the broad ligament where it can be rolled between the index finger and the thumb. If it is free from adhesions, it can be readily traced from the ovary to the end and very minutely examined. If it is adherent to the mesosalpinx (the peritoneal fold that suspends the oviduct) or the ovary; or is enlarged, then, of course, it is reasonable proof that the tube is diseased, keeping in mind that the normal Fallopian tube is a very small, hard, tortuous organ, varying but little

according to the size of the cow. It is about the size of the lead of a pencil.

Before taking up the subject of salpingitis, hydrosalpinx and atresia it might be well here to compare some laboratory findings with this clinical resumé.

Gilman in the Cornell Veterinarian makes two interesting and complete reports on the histology and bacteriology of the oviducts of the cow.

Case Reports*

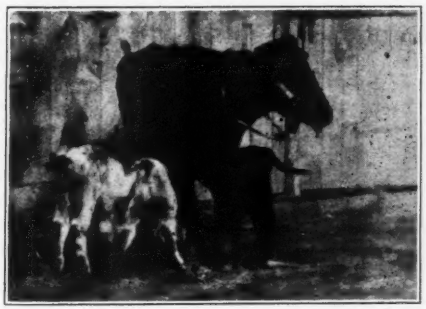
Case No. 1. History—Born 1913. First recorded parturition occurred May 15, 1918, with the delivery of a healthy calf. The placenta came away promptly, but on June 30, 1918, the uterus contained two ounces of pus. On July 8, 1918, examination revealed normal organs, and frequent examination thereafter showed no clinical manifestations of disease. Although oestral periods continued at essentially normal intervals, pregnancy had not resulted from numerous services when last examined on September 30, 1919. Slaughtered October 14, 1919.

Macroscopic Changes: Left Ovary—Contained one small cystic corpus luteum. Right Ovary—Many small connective tissue tufts on its capsule. Remainder of Tract—Apparently normal.

Microscopic Changes: Left Oviduct—In a section near the middle of the tube the lumen contained quite a bit of cellular debris. The epithelium is very well preserved, though the cilia are gone in a few places. The folds are engorged with blood, and a few contain some cellular infiltration. The entire wall is markedly congested and shows some cellular infiltration with slight oedema. Acute catarrhal salpingitis. In a section near the uterine end, the lumen contains much debris. The epithelium is entirely destroyed. The folds appear as very thick or broad, low eminences, some like warty growths, others finger shaped. They are made up of cellular, pascular, connective tissue which also thickens the basement membrane. The muscularis is much hypertrophied, and the interstitial connective tissue is somewhat increased. Several large blood vessels are seen running from the mucosa to this coat. Chronic catarrhal salpingitis.

Right Oviduct—In a section near the uterine end, the lumen contains much cellular debris and exudate. The epithelium is entirely destroyed. The folds have a jagged outline, and appear as very thick, broad eminences, the larger of which have united across the lumen, and are gradually occluding it. The epithelium is entirely denuded. The folds and basement membrane are thickened by a chronic proliferative inflammation. Most of the blood vessels show hyaline or amyloid degeneration of their walls. The inner half of the muscular coat is somewhat atrophied due to an increase in the interstitial connective tissue. The subserosa is slightly thickened due to an amyloid or hyaline infiltration of the connective tissue fibres and capillary walls. Chronic catarrhal salpingitis.

Bacteriological Findings: Left Oviduct—



Dr. C. D. Hornbeck's Multiparous Brown Swiss

Streptococcus viridans. The organism was short-chained, and rather large and oval in form. The growth on agar was filmy and granular. In bouillon it gave a uniform cloudiness, and fermented glucose, lactose, and saccharose. In litmus milk, the litmus was reduced with the formation of acid, but no coagulation took place.

Right Oviduct—Streptococcus viridans. It was evidently the same organism as that found in the left tube.

Case No. 2. History—Born 1915. First parturition occurred April 15, 1918, delivering a healthy calf. Placenta came away promptly, and on May 7, apparently complete involution had taken place, though there occurred a cystic degeneration of the corpus luteum on the right ovary, which was removed. Several subsequent examinations failed to reveal any further cause for sterility. On August 20, 1919, a cystic corpus luteum was removed from the left ovary, accompanied by slight enlargement of the left uterine cornu. On this date, the uterus was douched with a 2% Lugol's solution. On September 30, 1919, a pelvic peritonitis was evidenced by adhesions of the left uterine cornu and left oviduct. Slaughtered October 14, 1919.

Macroscopic Changes: Left Oviduct—Congested and firm. Right Ovary—One small embedded luteum, undergoing organization. Left Ovary—Very small connective tissue tufts on its capsule, some 3-4 cm. long. Left Uterine Apex—Adherent to bladder and ventral side of the uterus by a strong band of connective tissue. Remainder of Tract—Apparently normal.

Microscopic Changes: Right Oviduct—Shows a typical chronic catarrhal salpingitis with destruction of the epithelium, productive inflammation of the mucosa, etc. Left Oviduct—Mucosa alone affected, showing destruction of the epithelium, and a chronic proliferative inflammation of the mucosa. Chronic catarrhal salpingitis.

Bacteriological Findings: Right Oviduct—Staphylococcus aureus. Streptococcus viridans. The streptococcus was short-chained, and round in form. It fermented all three sugars, producing acid but no coagulation in milk. Left Oviduct—Streptococcus viridans, which was evidently the same organism as that found in the right tube.

Discussion and Conclusion

But two cases are given, as they are quite typical of those met with in the work. In all, the history was such as to make the definite cause of sterility uncertain, or lead one to suspect tubal infection with inflammatory changes, as the causative agent. Many of them showed no, or very few gross lesions in any part of the tract, but on microscopical examination, salpingitis in various stages was invariably present, ranging from the acute catarrhal endosalpingitis, to the chronic catarrhal form, with occlusion of the lumen. Case number 1 shows no gross lesions except a small corpus luteum of one ovary and many small connective tissue tufts on the capsule of the other, and there is little in the history to indicate the definite cause of sterility. In case number 2, removal of the corpora lutea was followed by a peri-salpingitis, with adhesions of the left uterine cornu and oviduct, which is quite indicative of tubal infection. Both cases show a distinct salpingitis on microscopical examination, which would seem to be quite closely related to the failure of conception.

Bacteriological Study of Tubal Infections

The bacteriological findings varied somewhat, but staphylococci and streptococci were found in most cases, the streptococci predominating. In one tube, an organism agreeing in every way with B. abortus was isolated from the uterine end. Negative cultures do not necessarily imply that the tube was sterile, for the small part cultured might have been sterile, while other parts not reached by the platinum loop, might harbor the organisms. On the other hand, finding but one organism does not exclude the possibility of others being present. The possibility of finding the bacteria only in certain parts of the tube is suggested as being probable in view of the fact that usually the catarrhal inflammation affects but a part of the tube. Only occasionally does one find a severe inflammation of its entire length. The streptococci were mostly of the viridans type, though the hemolytic variety was found in a few cases, as well as some giving no reaction on the blood plate. This conforms agreeably with the type of inflammation found, for the Streptococcus viridans is usually the variety found in chronic streptococcic inflammations. The etiological relationship between the lesions found, and the organisms associated with them, especially the streptococci, is undoubted, the infection usually spreading from a cervicitis, metritis, or inflammation of some other part of the tract.

No definite assertion can be made concerning the relationship of infection and inflammation of the tube to the production of sterility, but it seems quite significant that in the study of sections from 34 pregnant animals made on two visits to an abattoir, not one oviduct showed inflammatory changes. This is in marked contrast to finding salpingitis present in all sterile animals examined. Sterility might result in many instances from death of the spermatozoa ova from contact with the inflammatory exudate. In other cases, it is reasonable to believe that the fertilized ovum might die, being unable to reach the uterus, especially in those cases where the ciliated epithelium is destroyed, and the muscular coat weakened by inflammatory changes. Likewise, the spermatozoa might be unable to survive, or reach the ovum, due to the exudate in the lumen. Total or partial atresia, which is by no means uncommon, would, without doubt, prevent conception, especially if bilateral.

Macroscopic Study and Conclusions

Clinically, and on macroscopic postmortem examination, the catarrhal forms of salpingitis are not unrecognizable, even in cases where atresia of the lumen is present, except when tubal infection might be indicated by hyperaemia, or the formation of fibrous strands as

a result of peri-salpingitis or pavilionitis. Aside from these changes, the tube appears normal in every way, and there is no indication of infection in the part. For this reason, it is well to consider the possibility of tubal infection in cases of sterility.

In view of the results obtained in the work, the following conclusions were justified.

1. Streptococcic salpingitis with or without atresia of the lumen is apparently quite common in herds in which sterility and abortion are present.

2. Its relation to the production of sterility seems to be very important in many cases.

3. This form of salpingitis is not recognizable on clinical examination, except when accompanied by a peri-salpingitis with the formation of connective tissue strands on the mesosalpinx or capsule of the ovary.

4. It is suggested that the tube may harbor organisms which, if pregnancy takes place, may be directly or indirectly associated with abortion.

*Herbert L. Gilman—"Diseases of the Oviduct of the Cow and Their Relation to Sterility." New York State Veterinary College, at Cornell University.—The Cornell Veterinarian, Volume XI, No. 1, page 15.

Foreign Body of the Reticulum

DR. ROY HOUSER, BOURBON, IND.

Being stituated in a fairly congested dairy population, and having been compelled to devote some study to the diseases of cattle in general, I have been struck with the frequency with which one meets the condition that Hutyra and Marek calls "atony of the forestomachs," in short, indigestion, which most veterinarians recall is frequently encountered during the winter months.

Foreign Bodies Impinged in the Forestomachs of a Cow

As a disease per se I doubt if it exists. The causes ascribed by the authors are improper feeds, lack of exercise and diminished water allowance. The ration as a general rule during the winter is drier than in summer when the water supply is more abundant. But those of us who have had experience know that such cases appear when there is nothing to be desired as regards both the feed and the water supply, and it is becoming more and more apparent that most of them are due to but one cause: foreign bodies in the reticulum. I have found that it is not only the penetrant foreign bodies that inflict harm to ruminant patients, and than many of them do not travel in the direction of the heart as is generally supposed. I have found that some of them pass through the walls in other direction, become encysted and cause no inconvenience whatever and that others, through the actions of purgatives, are dislodged and pass off with the feces.

Since having learned to classify such cases and use rational treatment I have diminished the losses very materially. I now make it a practice to mention the possibility of foreign bodies in all such cases and to suggest operative treatment if the eliminative treatment brings no results. I have yet to be disappointed by not finding a foreign body nor in the outcome of the operation when proper aseptic precau-

tions have been taken. To illustrate the following cases are reported:

Case No. 1

A four year old pure bred Jersey giving a good flow of milk suddenly lost in appetite and milk secretion, manifesting at the same time a pronounced indigestion. I saw the case for the first time on January 22, 1922, and then almost daily for the following 24 days. At times she would seem to recover but only to relapse again into the same condition. The temperature was always normal, and the bowels alternated between diarrhea and constipation. The constipation was at times so obstinate that it would require 2 gallons of mineral oil and two pounds of bovine hydrogogue to produce evacuation. Defecation was painful and attended with frequent unsuccessful attempts.

From the beginning I had diagnosed the condition as foreign body and had requested permission to operate almost daily. The cow having become emaciated, the owner consented to an operation February 4th, just 23 days from the beginning of the period of illness.

I made an incision in the left flank, manually removed the contents of the rumen, and then passed the hand into the reticulum, where I found three 10-penny nails, one of which was penetrant, one steel heel-plate, some pieces of lead, some steel-drill shavings, a number of small pieces of wire, two tacks and one screw. All of these were more or less deeply embedded in the mucous membrane which on palpation felt like a burned piece of shoe leather.

The patient showed no improvement for several days, but finally revived and is now on the road to recovery.

Case No. 2

A three year old shorthorn heifer in advanced pregnancy began to show anorexia and diminished lactation when I was called on January 8, 1922. Besides the syndrome of case No. 1, the abdomen was tucked, there was the grunting of painful breathing, the temperature was 104° Fahr., and the extremities were cold.

The owner laughed at my diagnosis of foreign body and even jeered about it to his neighbors. She became gradually worse and died January 24th. The autopsy revealed a ruptured abcess, adhesion of the reticulum to the diaphragn, pneumonia and a wire penetrating the right lung.

I have had so many other cases of the same kind that I am becoming convinced that many valuable animals are lost through failure to diagnose foreign bodies in time to make operative treatment successful.

CORN STALK DISEASE SUCCESSFULLY TREATED

Regarding the treatment of so called "Corn Stalk Disease" of horses in this community will state that I have had most encouraging results from administration of the following via stomach tube:

Chloral Hydrate .....2-3 oz.
Potass. Permang .....45-60 gr.
Aluminum Sulphate .....30-45 gr.
Magnesium Sulphate .....3-4 lbs.
Hot Water .....3 gallons

It requires considerable amount of gymnastics and energy to get the tube down in some instances, owing to the excitable condition of the animal and the partial paralysis of the pharynx which seems to be present in most cases. No further medication is given until the next day when I place the patient on nux every 3 or 4 hours, followed the third day with arecoline lobeline and strychnin hypodermatically providing the bowels haven't moved thoroughly.

Out of some fifteen recent cases in its various forms have lost but one, and its death came as a surprise the 4th day.

Would appreciate hearing from brother practitioners giving this treatment a trial.

Weldon, Ill. **W. P. Shoaf.**

FINDS BARIUM CHLORIDE HARMFUL

As a matter of possible interest to your readers I am characterizing barium chloride as contra-indicated in the treatment of impaction in bovine animals. It causes wasting, intestinal irritation and weakness, and it counteracts the effects of the stimulation that is greatly needed. I regard it a dangerous, harmful drug, particularly in impaction even in small doses. I prefer tartar emetic alone or alternated with ipecac.

I treated a $25,000 bull impacted for ten days before being treated that responded to this treatment without developing any signs of enteritis which would not have been the case had I prescribed barium chloride.

Duluth, Minn. **F. L. Ober,**

Miss Catherine McClaughry, official weight tester of the public schools of Cook County, Illinois, reports there are more school children in the country districts showing evidence of undernourishment than in the City of Chicago, and attributes the cause to lack of milk and butter in the food supply.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Metritis in Sows

THIS is the season of the year when the practitioner is confronted with diseases and conditions incidental to farrowing. Metritis is probably one of the most common diseased conditions as a sequel of farrowing in sows, although this condition is apparently not as prevalent in sows as in other animals. There has been considerable abortion in sows during the last two or three years and metritis is not at all uncommon after this accident.

Types of Metritis

According to the intensity of the process and the character of the lesion it appears justifiable to classify porcine metritis as catarrhal, purulent and septic.

The Cause of Metritis in Sows

Dystokia predisposes to metritis. Undue exposure after farrowing and unsanitary surroundings are factors in the occurrence of this condition in sows. Infection is the primary cause of uterine inflammation in sows. There is probably a variety of microbian agents that may cause metritis. Pyogenic micrococci and streptococci, B. of Bang, representatives of the colon typhoid group are the principal infective agents that have been isolated from the discharges and uterus of cases of metritis. Other pathogenic bacteria such as B. pyocyaneus, B. suipestifer and B. suisepticum have been identified in some cases of metritis in sows, but were not considered to be causative factors. It is probable that the infection that produces abortion is capable of producing metritis.

The Symptom Complex

Catarrhal metritis may be so mild that it is not recognized. In the more intensive catarrhal metritis cases there will be a mucous or mucopurulent vaginal discharge. The affected sow will be unthrifty; there may or may not be a rise of temperature, depending upon the intensity and extent of the process.

Purulent vaginal discharge is a characteristic symptom of purulent metritis. There will be a rise of temperature of from 2-4° F. The affected animal will not eat. The inflammatory process may extend and involve the peritoneum thus complicating the symptoms.

In the cases in which there is septic metritis there will be a sudden onset. There will be 4-6° F. rise of temperature and the affected animal will have a tucked abdomen. There is usually a bloody discharge from the vagina and there is marked depression and dullness. The affected animal may drink freely but usually refuses to eat. This form of metritis usually terminates fatally in from one to three days. Purulent metritis may or may not be fatal, depending upon the extent of the inflammatory condition. Catarrhal metritis is usually subacute or chronic and may be a sequel of purulent metritis.

Postmortem Findings

The lesions observed in postmortem of cases that have died as a result of metritis consist of swelling of the external genitals, relaxation and dilatation of the uterine horns, varying quantities of fluid in the cavity of the uterus and inflammation of varying degrees of the uterine structures. When the peritoneum is involved there will be lesions of inflammation of that structure.

Treatment of Porcine Metritis

Porcine metritis is difficult to successfully treat and especially if the treatment is not begun in the early stages. Local applications are difficult because of the small size of the external genitals. Uterine irrigations are of value provided the fluid is siphoned out. A speculum may be used to dilate the vagina after which a small tube such as a horse catheter may be passed into the uterus and then the fluid can be injected. A dilute solution of tincture of iodine has been recommended by different practitioners as an irrigation fluid. After the irrigation fluid has been removed the injection of from one to four ounces of grain alcohol may be introduced and probably is of considerable value. It may be necessary to use the uterine douches three or four times. We would also suggest the injection into the axillary space once every 24 hours of 20 grains of quinine bisulphate.

Suggestions on Porcine Abortion

There has been much discussion at veterinary meetings and numerous articles have appeared in Veterinary Journals on the subject of "Abortion in Swine," from which valuable information has been obtained concerning this disease, but there are certain important facts that are yet unknown and unfortunately for the swine breeder the disease continues to exact its toll. The term "abortion" is used in this article in a broad sense and includes the loss of pigs regardless of whether they are prematurely expelled or remain in the uterus until the normal time for farrowing. This condition should probably be described under the caption of "Genitalia infections of Swine," as suggested by Dr. Williams, rather than porcine abortion. "Porcine Abortion" is not a new disease for authentic cases have been observed by practitioners for many years. The disease was not sufficiently widespread and prevalent prior to 1918 to require serious consideration. During 1918, 1919 and 1920 the disease was widespread and caused extensive losses but the disease was much less prevalent in 1921. Practitioners are now reporting the occurrence of this malady in various sections of the country and it appears as though it was becoming quite prevalent.

Etiology

There is apparently no specific cause that is responsible for abortion in swine, excepting rare instances of accidental abortions. The principal cause of this condition is infection, however, there are certain predisposing influences that should be given careful consideration. The extent of loss of pigs that may be attributed to abortion disease is variable and probably depends upon the virulency of the infection and the resistance of the sow and the foetus. Thus in one case there may be a loss of only one pig, in other instances there may be two, three or even the entire litter may be dead when expelled or die soon thereafter. It seems probable that by observing proper sex hygiene the vitality of the pig in the uterus could be increased and infections would not be as prone to attack and destroy the foetuses as in those cases in which the foetuses have a low vitality because of the failure of observing proper sex relations in the breeding animals. By a careful study of the gravid uteruses of sows, it is almost the exception to find one in which all of the pigs are normally developed. In such an examination one may find from 3 to 6 pigs of equal size and normally developed and from 2 to 5 that are either dead and disintegrating or are undersized. The foetal membranes of the under-developed or dead foetuses will show gross lesions of infection which, no doubt, has been responsible for the death or diminished vitality of the affected foetuses. Unless the infection extends in the gravid uterus and causes death to practically all of the pigs their premature expulsion will probably not occur. The loss of from one to four or five pigs in each litter is common and has probably occurred for many years. Runts are according to Williams the result of an infection in the uterus, in which the foetus was not destroyed but it failed to develop normally. This condition is probably not the result of infection with the B. Abortus.

The abortion storms in herds characterized by the premature expulsion of pigs that are all of the same size is the result of an acute infection. In some of these cases the B. abortus (Bang) has been identified and may have been the causative organisms. Other outbreaks are, according to laboratory findings, due to various representatives of the colon typhoid group.

In summarizing the causes of abortion in swine, it may be stated that according to the information now available the important factors in the occurrence of this condition are, first, diminished resistance of the sow and the foetus due to improper methods in breeding, feeding and care; second, infection with microbian agents such as pyogenic cocci, B. coli communis, B. suipestifer, B. paratyphoid B., and the B. Abortus Bang. These infections may occur in pure culture or in various combinations.

Control

The control of an infectious disease depends upon a comprehensive knowledge of the cause, source of infection, channel of entrance of the infection into the susceptible animal, and avenues of elimination of the infection from the diseased animal. The predisposing causes can be avoided by adopting the proper breeding methods and the provision of proper feed and care. A boar should not be put to service more than once daily and better results would be obtained by less frequent use.

As previously indicated, the principal cause

of abortion is infection, but there is a variety of microbes that are or may be etiologic factors and this fact necessarily complicates the measures of control. The pyogenic microorganisms and most if not all of the representatives of the colon typhoid group are universally distributed and to avoid the possibility of swine coming in contact with them is not practical. The B. abortus is probably primarily pathogenic for cattle and the prevention of infection with these microorganisms entails the complete separation of swine and cattle and also eliminates the use of milk or any of its products as food for swine, unless such products are sterilized. Such a radical provision is impractical and the relatively few instances in which abortion in cattle and swine occur simultaneously on the same premise does not warrant such a procedure.

It is generally conceded that infection that produces abortion in swine is ingested. It is therefore advisable to provide food and water that is free from infection. The provision of such provender is difficult but possible. The equipment used in feeding and watering should be frequently cleaned to remove possible contamination. Infection may be introduced into a healthy sow by breeding to an infected or contaminated boar, and therefore diseased sows should not be bred to the herd boar.

Infection is primarily eliminated from infected sows in the aborted pigs, placenta and discharges from the genital organs. In those cases in which the B. abortus has been an etiologic factor, it is possible that the B. abortus may be eliminated from infected sows in the milk.

The measures that may be used in the control of swine abortion may be summarized as follows: Observe proper sex hygiene in breeding, rational feeding, and good care; isolation of aborting sows and the proper disposal of aborted pigs, and placenta; aborters should not be bred until there is no evidence of discharge from the genital organs and the same boar should not be used on aborting and non-aborting sows; sows and boars should not be permitted to run in the same lots or to mingle with breeding cattle and milk or any of its by-products not known to have been obtained from abortion free cows should be sterilized before using as good for breeding swine; recently acquired gilts should be quarantined until they have had at least one normal oestral period, bred sows should be isolated until they have farrowed; and boars should not be used in service for at least thirty days and his sheath has been thoroughly cleaned; avoid the public service boar.

THE LARGEST HOG IN THE UNITED STATES
Fourteen Hundred Pound Poland-China Boar, Valued at $40,000, and Owned by John Grant, an Iowa Breeder

Treatment

Treatment of abortion proper is of no avail. If the microbian agents previously described are the cause of abortion, prevention of this malady is possible. It has been demonstrated that an increased resistance to pyogenic micrococci, representatives of the colon typhoid group, and the B. abortus, can be produced. Some practitioners have reported apparent success in the control of swine abortion by the use of a bacterin containing the various microorganisms that have been isolated from aborted foetuses, placenta, etc.

Metritis and other secondary conditions of the genital organs can usually be relieved providing such treatment is not delayed. The general methods of applying treatment was described in a recent issue of VETERINARY MEDICINE. The Swine Department of VETERINARY MEDICINE will gladly receive reports from practitioners.

PULMONARY ASCARIDOSIS

Pulmonary Ascaridosis

Pulmonary ascaridosis is a destructive disease of pigs caused by the larval form of the ascaris lumbricoides. This condition is frequently mentioned in the columns of Veterinary Medicine because of its importance. The economic loss occasioned by this condition is enormous. It has been estimated that 1/5 of the pig crop is destroyed by the parasites in some sections of the country. There is a further loss due to unthriftiness that occurs in a large percentage of pigs that do not die as a result of infestation.

Life Cycle of Parasite

The adult ascarid or round worm occurs in the small intestine and is less frequently found in the stomach, large intestine and bile duct. The sexually mature female discharges thousands of eggs or ova. The ova are eliminated from the body of the swine in the feces. The length of time necessary for incubation of the ova depends upon the external temperature. The embryo are protected by a capsule and are not easily destroyed by external influences. The embryo are found in filth, wallers, manure heaps and the superficial soil that have been contaminated with infested swine feces. The embryo are liberated in the intestine and some of them gain entrance to the lymph vessels and blood vessels and are thus carried by the circulation. Those that ultimately reach the capillaries surrounding the lung find conditions favorable and in this location they pass through the larval stage. When the larval stage has been completed in the lung the larvae migrate or are carried along the air tubes to the pharynx where some of them are entangled in food or water and are thus transported down the digestive tube and these paarsites find conditions favorable in the small intestine where they develop to maturity.

Control of Ascaridosis

The conditions resulting form these parasites are not difficult to prevent. The adult parasite is not difficult to expel from infested swine excepting in those cases in which the parasites have entered the bile duct. Oil of chenopodium and santonin are the drugs usually used in expelling the adults. According to recent experimental findings, oil of chenopodium is the most reliable agent but it has the disadvantage of being an extreme irritant. Successful "worming out" of swine is dependent upon properly preparing them by withholding feed for from 12-36 hours prior to the administration of the vermifuge.

The second important factor is the rotation of lots and pastures and the regular and systematic cleaning and disinfecting of hog houses. Special emphasis should be placed on the cleaning of the quarters for it has been demonstrated that the embryo and ova of the ascarid will live for months in 3 to 5% solutions of formalin and are not easily destroyed by any known disinfectants.

In summarizing control methods of ascarid infestation we would suggest that sows be given a reliable vermifuge soon after breeding and that they be thoroughly scrubbed and placed in clean quarters preferably on ground that has not been used for swine for at least one year. After the sow farrows her pigs should be kept in non-infected quarters until weaning time. By this simple procedure the losses due to these parasites will be reduced to a minimum.

INFECTIOUS RHINITIS

(Sniffles or Bull Nose)

Infectious rhinitis is relatively common and quite persistent particularly on some of the older farms in the corn belt. This condition may be the same as catarrhal rhinitis but it is usually more severe. The extent of the loss occasioned by this disease is difficult to estimate because of incomplete records of farm operations. It causes a loss of not less than 25% on some farms. As a rule, when the disease first appears on a farm only a few swine become affected but each succeeding year the percentage of affected animals increases and by

the fourth or fifth year from one-fourth to one-third of the pig crop may become affected.

Etiology

Inbreeding is probably an important predisposing factor. Filthy pens and hog houses and particularly those that have been in continuous use for swine for several years are conducive to this disease. It is not uncommon to find the disease affecting swine that have been recently introduced into premises where the disease had previously existed. This latter incident suggests the possibility of an infectious cause of sniffles. Some investigators have suggested the B. pyocyaneus as the specific causative factor. This microorganism is widely distributed in manure and other filth around the hog houses and lots. The pyocyaneus has been demonstrated in the discharges from swine affected with this disease, however, the universal distribution of this microbe would account for this.

Symptoms

Sneezing or blowing is usually the first evidence of infectious rhinitis hence the name sniffles. There is a tendency for the affected swine to root. They soon become gaunt and unthrifty. There will be a nasal discharge which is at first serous and becomes purulent as the disease progresses. Deformity of varying degrees occurs. The facial bones are usually involved and the snout may be turned upward or sidewise.

Lesions

This disease is characterized in the beginning by a catarrhal inflammation of the nasal mucosa, which later becomes purulent. In some cases variable sized areas of the mucous membrane becomes necrotic and the underlying bone tissue is then involved and soon becomes cancellated and enlarged, thus producing distortions of varying degrees.

Treatment

The value of curative treatment is doubtful but the condition can be prevented. It is possible that inhalation medication in the early stages before there is necrosis of the mucous membrane or involvement of bone will be of value. Some practitioners report the successful treatment of several cases by the use of tincture of iodine in a steaming bag. Veterinarians should use their influence in promoting better farm sanitation. Successful swine production is dependent upon rotation of pens, lots and pastures and clean sleeping quarters and houses. Filth is an enemy to health and normal development in swine.

Sex hygiene must be given more consideration in the swine industry. It is very probable that inbreeding is an important predisposing factor not only to sniffles, but also to other diseases. The excessive use of the boar is conducive to the production of pigs of a low vitality and hence a diminished resistance to various diseases.

Improper feeding particularly of the pregnant sow and especially at farrowing time is responsible for digestive disturbances and other derangements. The care and management of the breeding animals and the pigs until they are at least one month of age is of the greatest importance in swine production.

The Swine department of Veterinary Medicine is desirous of giving information that will be of value to the practitioner and we will be glad to receive suggestions.

ABORTION DISEASE IN A HERD OF SOWS

The following is the history of a herd of hogs from which the specimens mailed to you this morning were obtained:

There are 12 sows and 16 gilts in this herd. Four of the old sows have aborted 80 and 105 days after breeding, the pigs from three being about the same as the specimen you have, the other which went about 105 days, seemed to be normal but were not fully developed. They were alive but weak and died shortly after birth. Three gilts aborted within 30 to 60 days after breeding, were re-bred and aborted again, re-bred but failed to conceive. Three gilts aborted at about 100-105 days after breeding. Four gilts went full time and farrowed eighteen reasonably good pigs and a number like the specimen. The one from which the specimen was taken had five such as these came before the normal pig and three after.

These hogs were all vaccinated with anti-hog cholera serum and virus about thirty-five days after breeding. I should say all but two which were already immune. All had a very large dose of serum and absolutely no re-action was noted. The owner had a herd of hogs across the road which had a very acute attack of mixed infection previous to the time these sows were vaccinated but nothing had ever been noted among them.

Several owners in this vicinity have had large numbers of abortions mostly like this instance I have just described. One man has about 80 sows and gilts, 28 of which are pure-bred gilts and are separated from the remainder of the herd by just a wire fence. Twenty-four out of the 28 have aborted at from 30-60 days after breeding, the pigs varying from shapeless

gelatinous masses to pigs, some larger than a good sized mouse.

The discharged mass was reddish in color and part of it resembled the normal after-birth. All of these sows had a profuse discharge from the vulva for one to three weeks following abortion as did those of the other herd mentioned. These gilts were bred to three different boars; those of the other herd to two different boars. The rest of these 80 sows were bred to the same three boars as the twenty-eight gilts and so far none have aborted nor farrowed dead pigs but are having nice healthy pigs.

If it should be found that these hogs were affected with contagious abortion what should be done? Part of these sows and all the boars are pretty valuable. How long will they be carriers of the infection? When will they be likely to breed and carry pigs to maturity and when would it be safe to bring more sows on the premises?

In fact, would like to have all the data you can give on the subject together with your diagnosis.—H. B. R., Missouri.

Reply: Your letter received, also the specimen. You have given a very complete and concise description of the condition existing in the bred sows on the two different farms. There is, apparently, no question concerning the general diagnosis of the condition; that is, an infection that is resulting in abortion.

The specimen you submitted was a mass of foetal membranes containing several mummified foetal pigs. These mummified pigs had been dead for a considerable length of time before they were expelled. The cause of the death of these pigs could not be positively determined but infection has been found to be the most frequent and important etiologic factor in such cases. The mummified pigs were of different sizes indicating that the causative factor had affected one foetus originally and had extended from one foetal sac to the next until several had become involved and the pigs were thus destroyed at different periods of time.

Abortion in sows as it has been found in different sections of the country and particularly on a scale in which it has occurred in the herds you have described, is invariably due to infection. The type of infection probably differs in different outbreaks. In some cases as the infection that produces abortion in cattle. In other instances, abortion is apparently due to streptococcic infection or invasion of the foetal membranes or the uterus itself by organisms belonging to the colon typhoid group.

The length of time that infection will persist on premises has not been determined but it probably is not as important a source of infection as the diseased animal. Infection is eliminated from aborting sows, probably until the discharge ceases.

It has been found that by isolation of the aborting sows and douching those in which there is a purulent discharge, using a dilute solution of iodine, will usually suffice to overcome the infection. Some forty to sixty days after such treatment the animals are usually successfully bred. When the douche is applied, care must be exercised that all of the fluid is withdrawn, and some practitioners have reported splendid results after the iodine has been withdrawn by the introduction of from one to four ounces of pure grain alcohol, leaving this latter within the uterus. All aborted pigs and placental membranes should be disposed of by burning.

Some practitioners have reported that apparently good results have been obtained in these cases by the use of autogenous bacterins or stock bacterins containing the same type of microbian agents that have been identified in the placenta and discharges from aborting sows. These bacterins have been used in conjunction with the preceding outlined treatment.

Pertinent Information Anent Hog Cholera, by Dr. Niles

The final session was opened by Dr. W. B. Niles of the U. S. Bureau of Animal Industry, whose subject was "Hog Cholera and Other Infectious Diseases of Swine." Among the many important points brought out by Dr. Niles, the following were noted:

1. Hog cholera may be controlled but it will be many years before its eradication.

2. Owing to the varied symptoms and lesions, the diagnosis of hog cholera is often difficult, but delay is dangerous, so use serum alone if not sure of diagnosis and double treatment if no doubt exists.

3. The administration of the simultaneous treatment a short time after a single (serum treatment) does produce immunity, contrary to the belief of some.

4. "Breaks" are likely caused by insufficient virus or virus of low potency. Best to handle "breaks" as any other outbreak.

5. Hogs, newly purchased in stock yards, should be given serum. After they are taken home and are over the fatigue of journey, etc., give double treatment.

Report Vet. Con. Univ. of Pa., 1922.

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of farmalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.

2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 per cent formalin solution and sent to the laboratory whole and unopened.

3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per cent formalin solution.

4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

A CONTAGIOUS CATARRHAL CONDITION OF CHICKENS MANIFESTED BY SEVERE LAMENESS

Under separate cover I am sending you a chicken. I would like your aid in diagnosing the condition. This chicken is from a flock of 400 kept under ordinary farm conditions, the farm being an upland one. Some 25 have died in the past week. About a month ago the breeder began the use of potassium permanganate twice weekly in water, a very diluted solution of the same for a "sort of wheezing," as she called it. None died at that time.

The first noticeable symptom is lameness which before death becomes so painful that they can use the legs but little. Some of them show slight white-colored diarrhea; have little appetite during sickness but drink a great deal. Others of the flock do not show lameness as principal symptom, but instead a purple condition of the comb and wattles, sit around with eyes closed and the head and tail drooped.

Their feed consists of cracked corn, barley, oats and wheat all of which is in good condition. Small amounts are fed.

Some of the hens in the flock seem to be affected the same way. Three have died in the past week.

Post-mortem examination revealed digestive tract practically empty and only a number of petechae and small hemorrhages of the heart.

What treatment do you recommend in this case?—J. B. McQ., Ohio.

Reply—As no bacterial cause was found in the specimen we request that others be sent in order that we may continue the investigations.

There are three symptoms, however, that point to cholera: lameness, white diarrhea and the petechae found postmortem.

HEMORRHAGIC SEPTICEMIA IN A COW

I am mailing you, under separate cover, a section of the intestines from a three-year-old cow, one of a herd of twenty, which had just been turned into the stock field. On the second day, the animal fell sick at noon and died the same night. The autopsy showed lungs normal, but the pleura, pericardium and epicardium inflamed with large ecchymotic hemorrhages the outlines of which were rather diffuse.

These hemorrhages were also found in the peritoneum, kidneys, rumen and intestines. The liver and spleen seemed to be normal. There was no abnormal amount of fluid in the peritoneal or plural cavities and no gelatinous infiltration of connective tissues so commonly found in hemorrhagic septicemia.

I am wondering if it was botulism or, without complications, what a bacteriological examination will reveal. Any advice in this case will be appreciated.—E. D. R., Nebraska.

REPLY: Bacteriological examination showed typical organisms of hemorrhagic septicemia. The impression gaining ground that botulinus intoxication is a very widespread affection

of domestic animals is entirely without justification, and should not even be suspected of being the cause of the death of an animal showing the particular kind of postmortem lesions you describe in this case.

AVIAN TUBERCULOSIS

Under separate cover, I am sending you a fowl for examination. We have lost chickens out of this flock for over a year, with symptoms that vary considerably. Some show diarrhea, some are lame and some are emaciated.

A diagnosis will be appreciated.—V. W. M., Ohio.

REPLY: The microscopic examination of the specimen sent showed many tubercule bacilli in the liver and also in the intestines, showing that you are dealing with avian tuberculosis in this flock.

When tuberculosis is very widespread in a flock, much the best way of handling the problem is to destroy them all, clean up the coops and runs in a way that would prevent their successors from becoming contaminated.

It is possible, when only a few of the flock are suspected of having the disease, to give them the tuberculin test and then rid the flock of disease by killing the reactors and of course, following up with the usual sanitary measures that would be necessary to eradicate the disease.

JOHNE'S DISEASE

I am mailing you a package containing a portion of the small intestines of a cow. The animal in question is one of four that have taken sick and the disease ran the same course.

The appetite remains fair almost to the last few days of life, but in spite of this and the most careful attention in feeding, the affected animals become gradually more and more emaciated and finally die.

There is diarrhea that becomes thinner and thinner after the first symptoms noticed, and finally it becomes very watery and frothy. The animals show a great inclination to lick salt, and as a result, drink considerable water.

The feces are dark colored, but there is no distinctive odor. The lesions found on postmortem examination are confined to the intestines, which are very much congested, the walls thickened and red and are covered with mucous. The balance of the carcass is emaciated and anemic.

Your diagnosis and a method of eradicating the malady will be appreciated.—S. K., Illinois.

REPLY: Although the bacteriological examination of the specimens sent did not show the presence of the usual acid-fast bacillus of Johne's disease, it seems almost certain from the symptoms described and the course of the disease that this is the diagnosis that should be made.

In fact, when a number of cows in a herd begin to show diarrhea and emaciation and finally die, the practitioner is justified in suspecting Johne's disease as being the cause, and the herd should be handled accordingly. The proper treatment is isolation of the affected animals, the administration of intestinal astringents, particularly sulphate of iron and sulphuric acid.

While some animals yield to such treatment, most of them prove very refractory. In short, where many animals are exposed to a few thus affected, it would be economical to destroy the affected animals, clean up the establishment and dispose of the animals and everything that they have contaminated so as to prevent further infections.

Testing with avian tuberculin has been recommended as a diagnostic measure, but we are not as yet assured that it is not without fault.

COMPLEMENT FIXATION TEST FOR CONTAGIOUS ABORTION

I am sending you by parcel post a sample of cow's blood for examination. This is a five-year-old, part Durham and part Holstein cow that aborted during the sixth month of pregnancy, calf dead when born. The cow seemed to be in good healthy condition with the exception of retained fetal membranes which I removed without any difficulty.

This being the only cow in the herd that has aborted, the owner is very anxious to know if the cow has abortion disease.

Please send me your report at once.—R. E. B., Ohio.

REPLY: The complement fixation test for abortion gave a negative reaction. The findings, however, only show that this cow did not show any antibodies at the present time, but there may be other animals in the same herd which would give reactions as carriers of the disease.

We suggest that you send in specimens from a number of the animals in the herd, if you desire to have a complete test made. Remember that the complement fixation test for contagious abortion is a herd and not an individual test.

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

The Eggs and Larvae of Dog, Cat and Fox Parasites

IN a previous paper, published in Veterinary Medicine for September, 1921, the subject of examining feces for parasites and parasite eggs has been discussed. It now seems advisable to follow this with some descriptions and illustrations of the parasite eggs present in the case of the dog, cat and fox. There has been some demand for something of the sort on the part of veterinarians, and in view of the scarcity of illustrations covering this point in textbooks and the fact that the available illustrations are scattered through numerous publications largely inaccessible to the practitioner, there is evidently some reason for the demand. Strange as it may seem, the eggs of some of the commonest parasites have been figured but very seldom, presumably on the assumption that

Fig. 1. *Taenia pisiformis.* A, egg surrounded by vitelline membrane containing vitelline masses. B, embryophore. Enlarged. From Railliet, 1893.

everyone interested in them is familiar with them, which is not a safe assumption. Some of the available figures are not very satisfactory, but material for new illustrations is not always available in these cases, and as the existing illustrations serve the purpose of at least indicating something of the appearance of the egg in question, they have been copied here.

A number of the figures are taken from Railliet's Traité de voologie médicale, a work which has been for almost thirty years the most satisfactory reference book of veterinary parasitology. It is a matter for regret that this splendid work has never been issued in revised editions and brought up to date. At the present time it is almost impossible to purchase copies of the sole edition printed.

In examining the feces of dogs, cats and foxes for parasite eggs, there are certain eggs which are very commonly present, and for this reason these eggs are figured here. However, it is

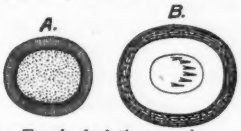


Fig. 2. *Taenia hydatigena.* A, egg as seen mounted in glycerine. B, egg after treatment with a concentrated potash solution. x 350. From Railliet, 1893, after Laboulbène.

the uncommon thing which is most perplexing, and for this reason the eggs of some of the rarer parasites are also figured. Among the commoner species present are tapeworms of the genera Taenia and Dipylidium and nematodes of the genera Belascaris, Toxascaris, Ancylostoma and Trichuris.

In the genus Taenia, the egg forms with a thin shell, with or without filaments, and the embryo, or onchosphere, lies inside of this enclosed in a thick, radially striate shell called the embryophore. As found in the feces only the embryophore and the contained embryo, or onchosphere, are present as a rule. This embryophore is commonly termed the egg and is so termed in this paper. The contained embryo is armed with six small hooks which may be seen without difficulty under the ordinary powers of the microscope. The eggs of tapeworms of the genera Multiceps and Echinococcus are quite similar in structure. In view of the over-

Fig. 3. *Echinococcus granulosus.* Eggs. x 245. From Blanchard, 1889, after Krabbe.

lapping of the egg sizes of tapsworms in this group, it is not usually feasible to make a definite diagnosis in regard to the species of tapeworm present, but such a diagnosis is usually

unnecessary anyway. The following figures cover briefly the eggs of some of the dog, cat and fox tapeworms.

Taenia taeniaeformis (T. crassicollis) of cats, spherical, 31 to 37 microns in diameter; T. pisiformis (T. serrata) (Fig. 1) of dogs and foxes, elliptical, 37 by 34 microns; T. hydatigena (T. marginata) (Fig. 2) of dogs, elliptical, 38 to 39 microns by 34 to 35 microns; T. ovis of dogs, 30 to 24 microns by 24 to 28 microns; Multiceps multiceps (T. coenurus) of dogs, spherical, 29 to 37 microns; M. serialis (T. serialis) of dogs, elliptical, 31 to 34 microns by 29 to 30 microns; Echinococcus granulosus (T. echinococcus) (Fig. 3) of dogs and cats, elliptical, 32 to 36 microns by 25 to 30 microns.

Fig. 4. *Dipylidium caninum.* Egg capsule. Enlarged. From Stiles, 1903.

The eggs of Dipylidium have two thin shells and are contained in egg capsules formed by the breaking up of the reticular uterus. The

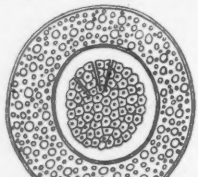


Fig. 5. *Dipylidium caninum.* Egg. Magnified. From Railliet, 1893, after Moniez.

number of eggs in a capsule varies with different species and may vary in one species. In the case of worms of this genus, one may find, in the feces of infested animals, segments, egg capsules or indivdual eggs. In D. caninum of dogs and cats, the egg capsule (Fig. 4) may contain 5 to 20 or more eggs, the egg (Fig. 5)

Fig. 6. *Mesocestoides lineatus.* Eggs. x300. From Railliet, 1893.

being spherical, 43 to 54 microns in diameter and with an onchosphere 25 to 36 microns in diameter. In D. sexcoronatum of dogs and cats, the egg capsule may contain 2 to 15 eggs, the eggs being spherical and 21 microns in diameter.

The eggs of tapeworms of the genus Mesocestoides are ovoid and have two very thin shells. The egg of M. lineatus (Fig. 6), which appears to be identical with M. litteratus, of dogs, cats and foxes, is 40 to 60 microns long by 35 to 43 microns wide.

Fig. 7. *Diphyllobothrium latum.* Egg. x 680. From Magath, 1919.

The eggs of Diphyllobothrium (Dibothriocephalus or Bothriocephalus) are elliptical and provided with a small operculum or lid at one end. The egg of D. latum (Fig. 7) of dogs, cats and foxes is 68 to 71 microns long by 44 to 45 microns wide, according to texts. Magath finds a range of 55 to 76 microns in length by 41 to 56 microns in width. In general the figures given here for egg sizes are those given

Fig. 8. *Opistorchis pseudofelineus.* Egg. Enlarged. From Barker, 1911.

in texts. As a matter of fact, careful measurement of a large number of eggs will usually show some eggs which lie outside of the range of measurement given.

Fluke eggs are usually more or less oval in shape, with an operculum or lid at one end. Opisthorchis pseudofelineus (Fig. 8) of cats has an egg 29 to 36 microns long by 14 to 16 microns wide.

Nematode eggs are very variable in shape and in the amount of development at the time they are deposited. Some of the more common are discussed below.

In the genus Belascaris, the eggs are more or less globular to elliptical, with a thin pitted shell. In B. marginata of the dog, the eggs

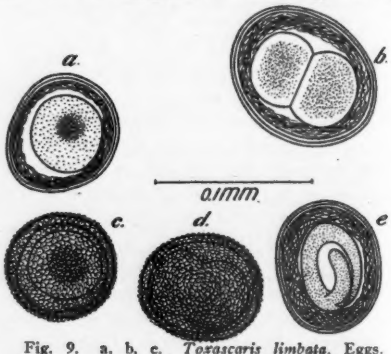


Fig. 9. a, b, c. *Toxascaris limbata,* Eggs. With developed embryo. c, d. *Belascaris marginata.* Eggs. Enlarged as indicated. From Wigdor, 1918.

(Fig. 9) are 72 to 104 microns long by 50 to 78 microns wide. In B. mystax of the cat, the

eggs are more or less oval and 65 to 75 microns long.

In the genus Toxascaris, the eggs are ellipsoidal, clear and smooth in appearance, with an outer clear, double-contoured chitinous shell and an inner yellowish membrane with interlaced striations giving the appearance of fibres. In T. limbata of the dog and fox, the egg (Fig. 9) is 72 to 104 microns long by 64 to 80 microns wide. As deposited by the female worm and as

Fig. 10. *Ancylostoma caninum.* Eggs in various stages of development. x 300. From Railliet, 1893.

found in the feces, the ascarid eggs (Ascaris, Belascaris, Toxascaris, etc.) show little trace of internal development and some little time is necessary for the formation of the embryo in the shell. Where eggs are found containing

Fig. 11. *Trichuris depressiuscula.* Egg. x 340. From Riley and Fitch, 1921.

developed embryos, it may be taken as evidence that they are not actually from fresh feces but from older material which may contaminate fresh feces collected from an area not

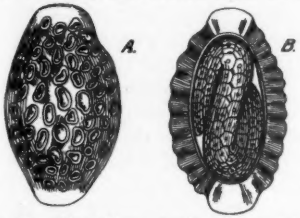


Fig. 12. *Dioctophyme renale.* A, egg showing shell surface with markings. B, egg showing embryo and optical section of shell. x 250. From Railliet, 1893.

properly cleaned before the collection of the fresh sample.

The hookworm eggs are elliptical, thin-shelled and usually found with the contents in a state of segmentation. In Ancyiostoma caninum of dogs, cats and foxes, the eggs (Fig. 10) are 74 to 84 microns long by 48 to 54 microns wide. In Uncinaria stenocephala of dogs, cats and foxes, the eggs are 63 to 67 microns long by 32 to 38 microns wide.

Whipworm and hairworm eggs are characteristically lemon-shaped, with an opercular plug at each end. In Trichuris depressiuscula (T. vulpis) of the dog and fox, the eggs (Fig. 11) are 72 to 80 microns long, according to Railliet, or 77 to 86 microns long, according to measurements of American material, by 37 to 40 microns wide. In T. campanula of the cat, the eggs are 72 microns long by 34 microns wide. In Capillaria feliscati of the cat, the eggs are 61 to 64 microns long by 27 to 32 microns wide. This species occurs in the urinary bladder, the eggs passing in the urine. Eggs passing in the urine are quite liable to be found in the feces as a result of contamination. In C. aerophila of the dog, cat and fox, the eggs are 67 to 72 microns long. This species occurs in the air passages of the lungs and the eggs pass out in the feces. The eggs of this species should be carefully differentiated from those of the whipworm in examining feces from foxes, as this is a common parasite of foxes in North America.

Fig. 13. *Echinepardalis pardalis.* Egg. Enlarged. From Travasses, 1917.

The eggs of the kidney worm of the dog and fox, Dioctophyme renale (Fig. 12), are ellipsoid, brownish, have a thick shell marked with numerous depressions, and are 64 to 66 microns long by 40 to 44 microns wide. When the female worm is in the kidney, the eggs pass in the urine and may be found in feces as a result of contamination. When the female is in the body cavity, the eggs are passed into the abdominal cavity and are largely picked up by the omentum in its role of protector against foreign objects.

Acanthocephalids, or thorny-headed worms, are rare in dogs and cats, but they sometimes occur, and one species, Oncicola canis, has

Fig. 14. *Synthetecaulus abstrusus.* Larva. x 150. From Railliet, 1893.

been found in the United States. The eggs have three shells. The eggs of Echinopardalis pardalis (Fig. 13) of the cat are 53 to 63 microns long by 38 to 42 microns wide. The egg sizes for O. canis do not appear to have been reported.

In the case of certain nematodes, such as some of those occurring in the lungs, the eggs do not pass in the feces, but hatch in the body of the host animal. In such cases larvae are found in the feces. An illustration of this is the cat lungworm, Synthetocaulus abstrusus. The eggs of this worm develop in the alveoli of the lungs and the young worms hatch, make their way up the trachea and are swallowed, appearing in the feces as larvae (Fig. 14).

Fig. 15. *Sarcoptes scabiei.* Eggs in various stages of development. x 150. From Railliet, 1893.

Numerous objects, such as plant spores, stimulate parasite eggs in feces to some extent. Among other things which may be present and which must be eliminated from consideration as worm eggs, are the eggs of mites, both parasitic and free-living. An illustration of the eggs of a sarcoptic mite (Fig. 15) is given here. These eggs are elliptical and rather large, being in the case of Saroptes scabiei canis of the dog about 150 microns long by 80 microns wide. In an early stage the contents of the egg are granular; later the development of the mite in the egg makes an identification easy.

HABRONEMIASIS IN HORSES

I have three horses under my care that are affected with a peculiar disease. There are other horses on the premises but these three are the only ones affected.

The first symptom noticed is a swelling of the tongue and lips and after a time caseous deposits form on the tongue. The temperature and appetite are normal but the animals are a little poor in flesh. The tongue and lips are getting better on one after four months, but the tongue is still very fibrous on the other two.

No organisms have been found but it appears to be a parasitic disease called "habronemic granulomata" by Dr. C. P. Fitch of the University of Minnesota. Two of these horses have been sent to Dr. Fitch for experimental purposes.

Kindly give me the life history of the above parasite and explain how they get into the tongue and lips, how long they remain there and where they go. There is no similar disease in this section of the state. Is there any cure?—T. L., Minnesota.

REPLY (by M. C. Hall)—If the parasites present in the tongue and the lips of horses prove to be larvae of **Habronema,** it will constitute a new finding in connection with the occurrence of these worms so far as the writer is familiar with the literature on this subject. The worms at present referred to the genus **Habronema** were formerly referred to the genus **Spiroptera.** The forms from the horses were known as **Spiroptera megastoma** and **S. microstoma.** At present we are familiar with three species, **Habronema megastoma, H. microstoma** and **H. musca.** These worms occur in the stomach, sometimes free in the lumen and sometimes in the mucosa. Worms can sometimes be collected by picking the glandular mucosa with forceps even when no worms are seen in the lumen of the stomach. **H. megastoma** forms large nodules, sometimes the size of a pigeon's egg, and is apparently the least common of the three species of **Habronema** in this country.

Life History Discovered By Ransom

The life history of **Habronema** was first discovered by Dr. B. H. Ransom of the Zoological Division of the Federal Bureau of Animal Industry. He found that the worm eggs passing in the manure were ingested by flies, **Musca domestica,** in the maggot stage. The flies breed in manure, and the embryos escaping from the eggs after ingestion by the fly maggots develop to larval worms. These larvae when fully developed are found in the head of the adult fly, frequently in the proboscis, and sometimes in the thorax or abdomen. When flies containing infective larvae are swallowed by horses, asses or mules, a thing which must occur frequently, especially when the flies are numbed with cold and fall into feed troughs or watering troughs, the larval worms develop to adults in the stomach of the new host. It also appears that the larvae in the proboscis escape as flies feed on the moisture on the lips of the horse, and this is apparently the customary mode of infection.

Summer Sores Due to Habronema

But these worms are not confined to the stomach of the horse and related animals as a site of infestation. It has been found that the skin conditions known as summer sores in the Equidae are due to larvae of **Habronema.** These sores arise in warm weather, which is the fly season, and are due to worm infestations.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

COCCIDIOSIS IN RABBITS (2)

The measures to be adopted for the control are of prophylactic, hygienic and of therapeutic nature. The two first mentioned play the principal part in the control of the disease. Attempts to treat coccidiosis are, up to date, without marked results.

Prophylaxis

For prophylactic purposes it is advisable to make a fecal examination immediately after the purchase of the animal, preferably on the first day. A second examination is made on the fifth or sixth day. Animals showing positive findings should be rejected. The newly purchased animals should be isolated and during the quarantine period they should be fed green feed and provided with sufficient drinking water. This facilitates the microscopical examination of the feces for coccidia and spores. Special care should be exercised in the microscopical examination when it is desired to introduce new female breeding stock, as they may infect their entire litter. The hatches should be kept dry and accessible to sunlight. In winter the rabbits should be protected from cold. They should also be protected from excitement by dogs and other animals. Each hatch should have a run which should provide exercise for the animals. Straw or hay should be used as bedding. These measures will increase the natural resistance of the rabbits and they do not become such easy prey to the invasion.

Slaughter Preferable

After the disease has already appeared the slaughter of all rabbits is indicated; in considering the unsatisfactory results which follow any known therapeutic measures, such procedure is probably the most economical. If the outbreak occurred in valuable breeding animals, attempts should be made to adopt measures which will prevent the transmission of the disease. The infected animals should be immediately slaughtered. The healthy animals should be subjected to microscopical examination. The meat of the infected animals is suitable for food purposes.

Disposal of Carcasses

The affected viscera as well as the carcasses should be covered with lime and buried at least three feet under ground. The burning should be even preferred to any other disposal. The hatches should be thoroughly cleaned, all refuse burned and the building washed with hot water and soda solution. Then white washed and exposed to the sunlight for at least fourteen days. The runs should also be thoroughly cleaned. The soil of the runs should be covered with lime and turned under.

An effective treatment for coccidiosis has not yet been developed. The administration of the various remedies have all failed to give any positive results.

CONTRIBUTION TO THE BIOLOGY OF THE CAUSATIVE AGENT OF SWAMP FEVER IN HORSES (5)

The extensive experiments of the author established that the cardinal symptoms of infectious anemia is a progressive anemia resulting from a primary destruction of the red blood corpuscles in the blood which, however, may be replenished to a considerable extent by the undisturbed regenerative activity of the bone marrow. Besides the anemia, there is the characteristic periodical fever with its typical intervals of six to eight days. These symptoms are supplanted by the other known clinical manifestations and autopsy findings (septicemia, swelling of the spleen, swelling of the lymph glands).

Diagnosis Possible

Considering this symptom complex, it is possible, therefore to make a diagnosis of infectious anemia in horses without diagnostic inoculations of horses. In doubtful cases the blood inoculations gives positive results. A general practice of diagnositic inoculations, therefore, does not appear absolutely necessary in all cases. From a differential diagnostic standpoint piroplasmosis and glanders are the principal infections and they may be readily excluded by blood examinations and by the specific tests.

May Be a Piroplasmosis

The supposition, based on the peculiar course of the fever, that the ultravisible virus of infectious anemia is of a malaria or protozoa-like character is substantiated by the hematological finding of the progessively

diminishing number of red blood corpuscles, the peculiar enlargement of the spleen and the absence of changes in the picture of the white blood corpuscles. This supposition is further substantiated by the peculiar epidemiological character of the disease and by the clinical course (chronic and latent form, virus carriers). Infectious anemia of horses, therefore, should be included in the group of piroplasmosis, anaplasmosis and malaria-like infections of domestic animals.

THE VALUE OF THE CLINICAL AND BACTERIOLOGICAL EXAMINATION FOR THE DIAGNOSIS OF OPEN TUBERCULOSIS IN CATTLE[3]

Based on his extensive data the author in his critical review on the value of the clinical diagnosis in tuberculosis concludes that it is hardly ever possible to establish a diagnosis with certainty. Even the suspicion of tuberculosis can be established only in about 20% of cattle affected with open tuberculosis. The cough and nutritive condition may only be suggestive of the presence of the disease as these signs may occur in many other abnormal conditions. The percussion and palpation are also only of slight value. More important is the demonstration of râles on auscultation. Râles, however, are absent in about 80% of open cases of pulmonary tuberculosis. Furthermore, they may be present in bronchial catarrhs. An absolute clinical diagnosis of tuberculosis of the udder cannot be made without a bacteriological demonstration of tubercle bacilli in the milk. The same applies to tuberculosis of the uterus, and for intestinal tuberculosis.

The value of the bacteriological methods for the diagnosis of open cases of bovine tuberculosis is also very limited. It is very difficult even in open pulmonary tuberculosis to obtain sputum containing tubercle bacilli. None of the instruments used for this purpose up to date have given satisfaction. Furthermore, the collected mucous also usually contains food particles to which acid-fast pseudo tubercle bacilli may adhere; therefore, the microscopical examination is not conclusive (animal inoculation takes from 4 to 6 weeks). The bloody operations (trachealtrocar) may lead to very unpleasant complications. On the other hand tubercle bacilli may not be present in the sputum even in advanced open pulmonary tuberculosis, besides the microscopical demonstration of tubercle bacilli in early cases of tuberculosis is very uncertain. Even by the combined clinical-bacteriological examination it is possible to recognize the disease only in 30% of cattle affected with open pulmonary tuberculosis, whereas in about 70% of such infections they have been considered erroneously as free from the disease.

TRANSMISSION OF FOOT-AND-MOUTH-DISEASE TO GUINEA PIGS[5]

Three guinea pigs inoculated with the virus from a hog developed vesicles on their feet. A reinoculation of the material into two other guinea pigs resulted in an affection of the mouth. Aside from the changes in the general condition, the guinea pigs showed salivation and nasal discharge; transmission with the blood of severely affected guinea pigs was not successful. Negative results also followed attempts to transmit the disease by scarification of the abdominal wall and subcarneal inoculations. The natural transmission has also failed. Rabbits, mice and rats proved refractive to inoculations.

FOOT MANGE IN CATS[1]

The author observed several cases of mange in cats which markedly differed from other forms of mange. It is manifested by the formation of very prominent scabs and similates the Scabies Norwegica of man. The affection is limited to the feet and especially the paws on which hard gray scabs up to a quarter inch thickness form. These scabs are strongly attached to the epidermis. In forcibly removing them a part of the epidermis becomes also detached. Itching and disturbance in locomotion are only noticeable at the onset of the disease; in advanced cases these symptoms are absent. The other parts of the skin are not affected. The cause of the disease is a new variety of the Sarcoptes mite which is not identical with the notoedris cati nor with the other mites occurring in our domesticated animals. The treatment requires thorough removal of the scabs (soap, oil) which is the most difficult part of the treatment. This is to be followed by the application of any of the known antiscabiescidal ointments.

1. Hoeller, Vienna (Monat. F. Tierh. Vol. 32, No. 7 and 8, 1921).
2. Prof. Reinhordt (Ideb.).
3. Muehler (Tier. Riurdschan, Nov. 16, 1921).
4. Zwick, Zeller, Krage, Gimier. (art. a. d. Reichs, 1920).
5. T. Pagliareine (Clin. Vet., 1921).

Zootechnics

Edited by E. MERILLAT, M. D. V.

Milk Versus Beef

EVER since 1850 the center of dairy production both in cattle and products has been gradually shifting westward and southward. In 1850 the center of the dairy production was in Eastern Ohio; in 1920 it was in Central Illinois. In a discussion of the subject by Edw. N. Wentworth in Hoard's Dairyman (Jan. 13, 1922) some interesting data are recorded, such as the gradual ascendency of some states, the sudden ascendency of others and the difficulties that some states have had holding their own against the growing competition of others. Referring to the details of these changes Wentworth reports:

Dairy Centers Changing

"The first census recording dairy cattle separately from other cattle was taken in 1850. At that time the center of dairy production was about ten miles north of Crown City, Ohio, and about sixty-five miles north of Huntington, W. Va. New York was the leading dairy state with 931,324 head; Ohio was second with 544,500 head; Pennsylvania, third with 530,000; Georgia, fourth with 334,000; and Virginia, fifth. Wisconsin, which is the leading state in dairy production today, was twenty-seventh at the time of this census.

Shifts to Kentucky

"By 1860 the center had moved to a point about 18 miles south of Cincinnati to the town of Independence, Ky. New York was still the leading dairy state, but Pennsylvania and Ohio had reversed positions, Illinois had come into fourth, and Texas fifth, with Georgia and Virginia following.

"Ten years later the center was found about fifty miles south and a little east of Muncie, Ind., between the small towns of Connorsville and Liberty. New York was still at the top, but Illinois had passed Pennsylvania for second place; Ohio was fourth; Indiana, fifth; and Iowa, sixth. The war had depleted the south and Texas ranked only ninth, with Georgia eleventh and Kentucky between.

Then to Indiana

"In 1880 the center was in the vicinity of Greencastle, Ind. The states ranked as follows: New York, Illinois, Iowa, Pennsylvania, Ohio, Missouri, Texas, Indiana, and Wisconsin.

"In 1890 the center was at Oakland, Ill., about forty-five miles south and east of Urbana. For the first time New York was forced to yield the palm as a dairy state, Iowa showing about 60,000 more cows. Illinois was third; Texas, fourth; Pennsylvania, fifth; Missouri, sixth; Ohio, seventh; Wisconsin, eighth; Kansas, ninth; and Minnesota, tenth.

Finally to Illinois

"The opening of the new century found New York once again predominant, with Iowa and Illinois following. Wisconsin had come into fourth place, with Pennsylvania, Texas, and Ohio following in sequence. The center was about five miles south of Urbana, Ill.

"Then years later it had moved to a point approximately eight miles east of Clinton, Ill. New York was then the leading dairy state, with Wisconsin a close second, and Iowa, Minnesota, Illinois, and Texas following in order, with Pennsylvania as seventh.

Wisconsin Now Leads

"In 1920 Wisconsin had assumed the lead; New York and Minnesota were virtually tied for second; Iowa was fourth; Illinois, fifth; Texas, sixth; and Ohio, Pennsylvania, Michigan, and Missouri ranged from seventh to tenth respectively, with over 1,000,000 cows each. The center of production was about forty miles south of Galesburg.

Ratio of Dairy to Beef Cattle

"The gradually increasing proportion of dairy cattle in our cattle population is of interest. In 1850, 36.2 per cent of all cattle in this country were dairy cattle; in 1860, the percentage was 38.5; in 1870, it was 40.1; in 1880, it was 34.6; in 1890, it was 31.9; in 1900, it was 25.3; in 1910, it was 33.7; and 1920, it was 47 per cent. Just why there was a decline in the period from 1870 to 1900 is easily explained. The number of dairy cattle were constantly increasing during this time but the development of the range stimulated the production of beef cattle so much more rapidly than the growth of the cities stimulated the production of dairy cattle, that the percentage of dairy cattle declined despite an actual increase in numbers."

"Dairy Blood" Not the Cause of Low Beef Consumption

This variation in the ratio of beef and dairy cattle as shown in the national decennial census is exceedingly good information and coming from such a profound student of big problems as Mr. Wentworth it is taken as authentic, but we can not agree with his views about the harmfulness of "dairy blood" to the beef industry nor about the project of encouraging the breeding of dual-purpose cattle as a remedy for the low consumption of beef products. The truth seems to be that the packing industry has destroyed itself. Industries, like bacteria, often produce conditions that destroy them. The meat packing

industries by paying a reasonable price for cattle and selling at a price that was within the purchasing power of the public made beef a nationally approved food. But, since more than a decade ago the public began to balance its ration with dairy products because of the high price of beef the consumption has gradually declined, and although the climax was delayed by the demands of war its arrival sooner or later was, we think, inevitable. On the contrary Wentworth explains the discomfiture of the beef producer and beef industry as follows:

Future of Dairy Interests Bright

"The future of dairy production seems bright. There is no longer cheap land available for an extension of beef production, and it may reasonably be expected that the next census or two will show a ratio between beef and dairy cattle closely comparable to the ratio of rural to urban population.

"The increase in dairy cattle introduces a complex problem in beef production, since an increasingly large number of the cattle received at the principal markets show dairy blood and conformation. Regardless of the efficiency of the dairy animal in its own field, it is very unsatisfactory as a producer of beef, and a large share of the blame for the decrease in the quality of beef during the last twenty years, as marketed in the small towns and from local butcher shops, may be laid at the door of the dairy cow. Despite the partisan beliefs of the supporters of beef and dairy cattle respectively, it seems possible that a half century hence American cattle will be more of a dual-purpose type. This will probably not involve a change in the present breeds of cattle, but instead a modification of the ideals towards which the breeder will select. Such a forecast is tentative, to be sure, and there will likely be many other economic factors introduced before the future trend of cattle types will be definitely determined."

The immutable law of supply and demand is operating to the advantage of the dairyman whose products are being recognized as indisputiably essential to the national welfare: Both health and general prosperity depend much upon the dairyman. It is he who will survive and his position will become more secure as the cultivated prejudice against the beef of dairy types declines. It is becoming too apparent that the difference in both the quality and percentage of edible meat between the beef and the dairy types has been very much exaggerated. Commenting on this phase of Wentworth's article the editor of Hoard's Dairyman says: "The buyer has been in the habit of paying for the color of the hide and prejudiced opinion, rather than the amount and quality of edible meat."

Missouri Hereford Cattle won first honors at the 1922 Western Live Stock Show in Denver.

MEXICO BUYS OUR LIVE STOCK

Recently two agents of the Mexican government visited this country in search of live stock for agricultural schools in Mexico. They wanted milking shorthorns, Guernseys and Ayrshires, Duroc-Jerseys and Poland China hogs, Merino sheep, milk goats, Arabian and Morgan horses. They stated that Mexico is undergoing a great industrial and agricultural revival, and that in the last 10 months the government has expended 1,000,000 pesos for agricultural implements.

BREEDING EXPERIMENT BY THE B. A. I.

The animal husbandry division of the U. S. Department of Agriculture is beginning a breeding and feeding experiment to contrast the results of using scrub, crossbred and purebred boars on scrub and crossbred sows. Ten crossbed sows of various breeds and mixtures and 10 scrub sows of the razorback kind will be used. Half of each of these groups will be bred to a purebred boar; and half of the first group will be bred to a crossbred boar, and half of the other group will be bred to a scrub. This scheme of breeding will be carried on from generation to generation. Some of the offspring will be fed out, and some will be kept for breeding. Shotes from the different lots will be fed identically, so that a fair comparison can be made. Scrubs and crossbreds also will be compared in feeding trials with purebreds.

ILLINOIS SHORT OF HORSES

The Farm Bureau Bulletin of Warren county, Illinois, recently published the following: "It will take 24 years to replace horses now on Warren county farms, according to the present rate of breeding. This fact was brought out by a survey of the Illinois Agricultural Association and the farm bureaus. The figures showed 9,195 horses on 1,076 farms in this county. A survey on 32,515 Illinois farms in 43 counties shows a total horse population of 238,564. The 45,312 brood mares only foaled 8,918 colts during the quarter ending July 1, 1920. If it is assumed that the average age of a horse is 13 years, it follows that a shortage of good farm horses will be inevitable, unless the present output of farm raised colts is doubled. Continued inactivity in horse breeding on the farms of the corn belt may ultimately result in the prices of work horses rising to an almost prohibitive point."

Feeding Orphans With Milk of Other Species

So many of our readers are requesting information about the preparation of a milk diet for young animals that have been unfortunate enough to lose their mothers, or which must, for one reason or another, be raised from milk of another species.

As the question almost always applies to the nourishment of young other than bovine, which must be raised on cows' milk and is therefore purely a matter of transforming the milk of cows into one that nearly approaches in analysis the milk of the species to be thus raised, the accompanying table will enable the veterinarian to compound a food by making the changes indicated in the figures shown.

To compound a substitute, lime water should be used in making the desired equivalent, sugar of milk to bring up any deficiency in the sugar contents and cream of cow's milk to supply needed fats.

It is only necessary to remember that during the first few days after birth the equivalent should be accurately compounded in order to prevent digestive disturbances and that as the young grow older the raw milk from cows unchanged will answer every purpose.

It is also very essential to feed such animals only with uncontaminated milk. Care must always be taken to use only clean products and always mix them for immediate use in perfectly clean vessels until such time as the alimentary tract becomes less susceptible to derangement. As an example, the milk of mares is very low in fat and very high in sugar. This fact would require that the milk of cows to be used to raise an orphan colt should be diminished in fat by diluting with lime water and increased in sugar content by the addition of sufficient sugar of milk to bring it up to the percentage shown in the table. In the case of pigs to be raised with cows' milk the fat content is increased by the addition of cream of cows' milk and the sugar diminished by dilution with lime water.

By referring to the table equivalents can be made to serve any purpose.

Average Content Table

Species	Water	Solids	Fat	Sugar	Casein	Alb.	Ash
Human	87.58	12.42	3.74	6.37	6.80	1.21	0.30
Cows	87.27	12.73	3.68	4.94	2.88	0.51	0.72
Goats	86.68	13.32	4.07	4.64	2.87	0.89	0.85
Ewes	83.57	16.43	6.18	4.17	4.17	0.98	0.93
Camels	87.13	12.87	2.87	5.39	3.49	0.38	0.74
Asses	90.12	9.88	1.37	6.19	0.79	1.06	0.47
Mares	90.58	9.42	1.14	5.87	1.30	0.75	0.36
Sows	84.04	15.96	4.55	3.13	7.23	7.23	1.05
Bitches	77.00	23.00	9.26	3.11	4.15	5.57	0.91
Cats	81.63	18.37	3.33	4.91	3.12	5.96	0.58
Rabbits	69.50	30.50	10.45	1.95	15.54	15.54	2.56

TRIPLETS JUST BORN

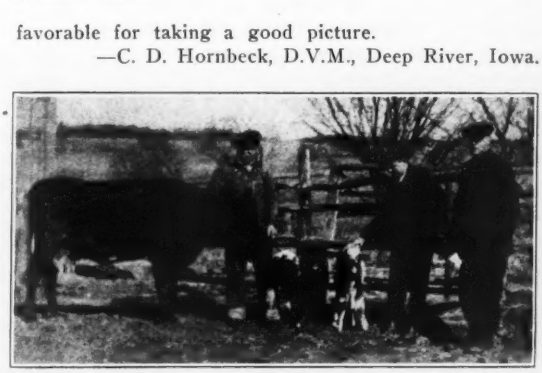
(Shown at two weeks old, Page 167.)

Please find enclosed photographs of a cow that has given birth to triplets which are now two weeks old, and in splendid condition.

The cow is a brown Swiss, bred to a roan bull. Two of the calves are roan and one is red. The calves are all spry and are developing normally. The cow is owned by one of my clients, Mr. Clate Ladley, who lives one mile east of Deep River.

Weather conditions were rather unfavorable for taking a good picture.

—C. D. Hornbeck, D.V.M., Deep River, Iowa.



FLUSHING EWES

In bulletin No. 906 issued by the U. S. Department of Agriculture and entitled "Flushing (extra feeding) and Other Means of Increasing Lamb Yields," a very complete summary of experiments extending over a period of five years is given covering a total of 302 matings as conducted at the B. A. I. farm at Beltsville, Md. From these experiments we learn:

1. Feeding at breeding time to increase the number of twins produced by ewes is called "flushing."

2. The percentage of lambs produced by a flock depends upon the number of dry ewes and the proportion of ewes producing twins and triplets.

3. The practical advantages of flushing lies in the production of twins, which in turn depends upon the number of ova produced by the ewe.

4. Experiments reported herein indicate that ewes getting in lamb first produce the largest percentage of twins.

5. Data from experimental work indicate that ewes should gain at least seven pounds a head during the breeding season to obtain largest percentage of twins.

6. There seems to be a natural tendency toward twin production, which varies in different breeds.

7. It is only in extreme cases that the ram has shown any influence on the number of twin lambs produced by a flock.

8. Records do not indicate that ewes born twins of twin parentage are more prolific than single ewes.

9. There is no material difference in the size of twins and singles when fully developed.

10. Although at market age twin lambs would not weigh so much as singles the difference in weight would be small compared to the total weight of lambs for sale, thus making twins more profitable.

This excellent Bulletin and one entitled "Breeding Morgan Horses," or Circular 199 of the U. S. Department of Agriculture, may be obtained for 15 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Instinct is a mystery, insoluble by empirical science like gravitation, for though its behavior may be analyzed as a compound reflex, automatic habit or sum of evolutionary effects through natural selection, its primal essence (the original impulse) can never be defined any more than life itself.—Maud Phillips.

EFFECT OF PASTEURIZATION ON THE CREAM LAYER

Although the pasteurization of milk is important and necessary, the volume of cream on milk begins measurably to decrease when the temperature of pasteurization rises from 140° F. to 144° F., according to a bulletin issued by the Agricultural Experiment Station of the University of Illinois.

"As the temperature goes higher, the decrease in the volume of cream becomes rapidly more pronounced; at 145° F. it amounts to slightly more than 10 per cent by volume; at 146° F. it amounts to 16.6 per cent; and at 148° F. to approximately 40 per cent," says the bulletin.

"The layer of cream on the bottle of milk as delivered to the consumer is important because the consumer used it as an index of the richness of the milk and as a source of cream.

"Since 1900 a heating of the milk to 140°-145° F. for thirty minutes has been generally recognized as proper pasteurization. Recently there has been a growing demand that the temperature of pasteurization be increased to 145° F. for thirty minutes as a minimum time and temperature.

"In the operation of practically all large commercial pasteurizers, a variation of at least three degrees Fahrenheit is practically unavoidable. Many machines vary even more widely. Accordingly, the requirement of 145° F. as the minimum temperature means pasteurization at 145° to 148° F.

"Repeated, careful studies by different scientists have uniformly shown that the most resistant disease germs which may enter milk are destroyed by a fifteen-minute heating at 140° F. Under such circumstances pasteurization at 142°-145° F. for thirty minutes provides a very considerable margin of safety, both in the matter of temperature and of time of exposure.

"The proposition to require pasteurization at a minimum of 145° F. for thirty minutes involves so large a destruction of the cream layer, which is highly esteemed by the public, that such requirement would probably result in a decreasing consumption of pasteurized milk. Accordingly, this increase in the margin of safety would hardly seem justified in the absence of any evidence that 142°-145° F. is insufficient, and in the absence of any attempt to provide increased safety in other ways.—Weekly News Letter.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Cotton Seed Meal

Dr. J. Howard Brown of Rich Square, North Carolina, sends some cottonseed meal and the following letter:

"Under separate cover I am sending you a sample of cottonseed meal. This meal was fed to one cow, four or five years of age and giving milk. On the morning of the 13th the cow was noted to have a staggering gait and listless appearance. Muscular tremors were apparent and the cow rapidly became weaker, finally went down and died with a spasm about 3 p. m. of same day.

"A two year old heifer, with a four weeks' old calf was immediately brought to same place and was fed with same meal. On the morning of the 17th day the heifer showed a staggering gait with weakness of hind quarters and refusal to eat anything with exception of small ears of corn. Temperature pulse and respiration seem to be normal.

"The owner of these two animals seems to think that the cottonseed meal has poisoned them. I should add that the cow that died had access to lye soap and undoubtedly ate and licked some of it. My opinion is that the cow died from the effects of the lye and that the heifer has a case of indigestion."

Microscopic Examination Negative

I cannot find anything in the meal, so far as the microscope will reveal that is injurious. The lye, of course, is injurious.

There has been much talk and discussion of the injuriousness of cottonseed meal to livestock and investigations have been made. However, most of this goes back years ago. I have before me bulletin by Prof. R. R. Dinwiddie on Cotton Food-Products in Hog Feeding, published by the Arkansas Agricultural Experiment Station, from which I will quote as follows:

"Cottonseed meal of good quality, when fed beyond a certain limit, has been found harmful to health in all species of farm animals. Nevertheless, in suitable doses, which experience has determined, it is profitably used in cattle feeding, in fattening steers at or in the vicinity of the oil mills in the south, and as a component in rations for dairy cows everywhere throughout the country. Evidently the toxicity for these animals is a question of dosage, a suitable allowance forming a harmless and profitable food, while an undue allowance acts as a more or less virulent poison and is, therefore, in the highest degree unprofitable.

Dangerous for Hogs

"It might be supposed that the same statement of the case would apply to hogs, but this is not the prevalent belief. Feeding experiments with cotton seed and meal have, in general led to so many fatalities in hogs that these feeding stuffs in any quantity are usually regarded as unsafe and unprofitable as a food for pigs at any stage of growth. In my previous report it was pointed out that many of the experiments on which this opinion was based were open to criticism on account of the large quantity of cottonseed meal fed as compared with similar feeding tests with cattle assuming the susceptibility to a toxin to vary inversely as the weight of the animal. Some experimenters, however, have found that even minute doses of cottonseed meal have proved either fatal or harmful in their effects. I have not had this experience but have no desire at this time to criticise or analyze the experiments of others, since experimental work in this line is by no means complete.

Results of Over Feeding

"The present series of experiments did not afford much opportunity for further studying this problem. The following based upon such opportunities for observation as we have had may be previously set down as the course or sequel of events in cases of overfeeding with cotton seed or cottonseed meal. Congestion of the eliminative organs, liver and kidneys, followed by one of three conditions according to the degree of overfeeding.

"(a) Progressive engorgement with impairment of function leading to acute drops-

ical effusion into the various serous cavities and death within two months or less. This is the most acute form.

"(b) Primary engorgement as above followed by degenerative changes, fatty and atrophic in the liver, sclerotic and atrophic in the liver, sclerotic and atrophic in the kidneys, with progressive loss of function.

"(c) Congestion of less degree which the organs become more or less habituated to and in which only slight and temporary symptoms develop and no marked organic changes are found.

Proper Rationing Not Harmful

"(d) Long continued feeding on cottonseed meal in the safe doses prescribed above has given rise to no gross organic changes in liver, kidneys or other organs discoverable on slaughter. No fault has been found by the butcher purchasing our animals as to the quality of the flesh or fat. Prolonged feeding on cotton food products has been found to greatly heighten the melting point of the lard.

SILAGE SUSPECTED OF POISONING

Dr. R. E. Hanson of Forest City sent me a sample of moldy silage with the following letter:

"Under separate cover am sending you a sample of ensilage which I think is the cause of the death of five horses on one farm.

"These horses have all shown symptoms of forage poisoning have had access to ensilage for the last two months.

"Up to January 1st Mr. Waltum (owner of dead animals) lost five horses and two mules, ages ranging from two to four years old, was first called there on January 27th and at that time there were two horses down which died that night. Horses were first to die, all the above seven had excess to ensilage, mules were the youngest of all and did not get as much ensilage as the others and I think that, that is the reason they were last to go.

"After my first visit I gave the last five head a physic with a tonic and potassium iodid, but with no results.

"First symptoms that were noticed was that animals were unable to swallow and a slight stiffness in their gait, these symptoms increased until animal was unable to stand, would die in about eight to twelve hours after going down, temperatures were all sub-normal, pulse about normal, bowels discharge contained mucous with a slight diarrhea.

Autopsy showed congestion of all intestines but will say that post mortem was not very satisfactory, animals had been dead several hours."

The silage was examined and found to contain several molds of the type referred to previously in the journal Penicillium, Monascus, Fasanum and Trichothecium, and I feel that animals should not be fed silage of this kind. I am satisfied that cases of poisoning of the kind described are most likely referable to molds of some kind.

SYMPTOMS OF WILD CHERRY POISONING

Dr. F. C. Smith of Sherman, New York, writes the following letter about the symptoms of cherry poisoning:

"What I want to know especially is whether or not wild cherry poisoning is ever characterized by a high fever, continuing for a day or so or even longer. As I understand from reading, it is only when the leaves become wilted that they are dangerous. In your experience have you found this to be true? Are there any characteristic lesions on post-mortem examination?"

The cherry poisoning referred to here is undoubtedly the common black or rum cherry (Prunus serotina).

I submitted the above letter to Dr. H. D. Bergman who replies as follows:

"Replying to your communication relative to the attached injury will advise that I can locate no specific instances of poisoning in animals due to the wild cherry. I appreciate that it is generally supposed that the leaves, particularly in the wilted state are poisonous. I have talked with veterinarians who live in localities where the wild cherry is found quite generally and while it is commonly understood that it is poisonous, they have failed to observe specific cases of poisoning. It is probable that animals generally will not eat the leaves in sufficient quantity to cause poisoning.

"Considering what is commonly supposed to be the active cause of the poisoning, I do not think that it would be characterized by a high fever, unless of sufficiently chronic nature that secondary infection might result. I am enclosing two reported cases of poisoning in ewes and in the horse by cherry laurel which might be of interest.

"C. Aggio[2] observed the poisoning of ewes by cherry laurel. There was a loss of appetite, vomitation, inability to rise, and several deaths.

"Adsetts describes a similar case in the horse. There was an indistinct and feeble pulse, mucous membranes ingested, difficult respiration, uneasiness, prostration, coldness of the extremities, loss of appetite, constipation, diminished urination, and acute pain; protracted over three days, these eventuated in death.

Not a Cyanide Poison

"It will be readily perceived from these examples that one has not to deal here with simple cyanide poisoning. It is well known that the train of symptoms and the post mortem lesions in cases of the ingestion of a plant often suggest irritation which is by no means typical of the pure active principle. The difference between the effects of the yew plant on the one hand and the active principle texine on the other hand form a good similar example. The difference is obviously referable to the fact that often these plants contain, in addition to a specific active poison, irritant substances; e. g., cherry laurel contains an essential oil analogous to turpentine.

The wild black cherry is perhaps the species most frequently referred to as the one which causes prussic acid poisoning. The distribution of this species is from Nova Scotia, New England, middle states and south to Florida and west to Dakota, Nebraska, Missouri, Oklahoma and Texas, in which it is common. In the Mississippi valley it only occurs in woodland pastures. In Vermont it is common in cleared pastures. Mr. Charles D. Howard made a large amount of chemical analysis.

"The average of ten analyses shows that 100 grains (about ¼ lb.) of leaves (a) yield 212 milligrams, or about 3.2 grains, acid, while the same quantity of fresh leaves (d) yields 42 milligrams acid. The same is noticeable of chokecherry.

"The leaves of the wild black cherry are the most poisonous of three species investigated, though all are dangerous.

"Both the wilted and fresh leaves are poisonous, while the dried are to be regarded with suspicion.

"Vigorous, succulent leaves from young shoots, which are the ones most liable to be eaten by cattle, are far more poisonous than the leaves from a mature tree or stunted shrub.

"Leaves wilted in bright sunlight to about 75 per cent original weight, or until they begin to appear slightly limp and to lose their gloss, yield the maximum amount of prussic acid."

I would expect the cases of poisoning more frequently in the eastern states than in the west. This plant, as I stated, is rarely seen in our common pastures in Iowa.

The symptoms as commonly recorded are "labored respiration, diminished pulse, numbness, fright, protruding eyeballs, convulsions and death from paralysis of lungs," there is considerable frothing at the mouth.

FLORA OF CORN MEAL

Professors Charles Thom and Edwin LeFevre have published an interesting article on "Flora of Corn Meal." Corn meal is often moldy and injurious to animals and these authors say: "Among these the following species of molds were characteristic of many series of cultures: Fusarium sp., Aspergillus repens, A. flavus, A. tamaria., A. niger, Citromyces (or Penicillium section Citromyces) sp., Penicillium oxalicum, P. luteum varieties, Mucor sp., Rhizopus nigricans, and Syncephalastrum sp., together with various yeasts and yeast-like fungi. Among bacterial groups, the colonaerogenes group and lacto-bacilli were most abundant in fresh meal. Aerobic spore formers and micrococci were always present and persisted in the stored product.

Within the range of composition found in merchantable meals no bacterial activity was detected. Only one grade of unbolted meal showed signs of mild development below 13 per cent of moisture. Above 13 per cent moisture, Aspergillus repens begins to be an active agent of spoilage somewhere between 13 and 15 per cent of moisture, varying with the form of milling practiced. Several other species of molds are active in meal containing 16 per cent moisture; and numerous forms, including some bacteria, develop when 18 to 20 per cent of moisture is found.

Many samples of corn are found to carry extensive infection with Fusarium, Diplodia, Aspergillus repens, or Penicillium, especially in the germinal area and in the tip of the kernel. These sections of the kernel are removed in varying degrees by different milling systems. The bolted meals examined show a corresponding reduction in count of viable organisms as shown by culture.

[2]Bull. New Hampshire 56.

According to Babcock and Bennett the screw worm causes an annual loss in this country of not less than $4,000,000.

Epitheloma of the Penis. Amputation

By C. W. SASS, TOLEDO, OHIO

History

The subject is a middle aged, light draft gelding that developed a paralysis of the penis from the weight of a growing epithelioma of the preputial fold until the penis hung down full length, producing total disability, not only from the constant flopping of the organ but also on account of its offensive appearance. The case is remarkable for the absence of any complications arising from as they usually do, from exposure and traumatism. There was no edema of the organ or sheath at the time of the operation.

The patient was in fair health but somewhat unthrifty in general appearance despite a good appetite and good care, indicating the usual obscure cachexia that is generally associated with cancer.

The affection began as a small erosion that was not noticed until the horse began to show an inclination to keep the penis extruded but grew gradually during the year preceding the operation.

The Operation

The operation was performed under general anesthesia and the hemorrhage was controlled with a tourniquet applied tightly behind the proposed seat of amputation. An ordinary gauze bandage was used for this purpose.

The urethra was dissected away from the body of the penis from before backward and the amputation effected just behind the tumor where the tissues seemed healthy. A multiple ligature was applied to the stump to control bleeding after the tourniquent was removed, and then a triangular piece of the urethra was resected at the point of cleavage and sutured with interrupted sutures to the adjacent integument.

With the exception of the usual enfeeblement arising from a major operation the patient survived the ordeal without any operative complication.

The Results

There was almost immediate improvement in the patient and not post-operative complications developed despite the fact that little attention was ever given to the wound. In two weeks it was ready for the harness and gradually gaining in flesh and vigor which before the operation was lacking.

At this writing several months later there is no obstruction of the urinary passage. The stream is a free one showing no evidence of structure from cicatrization as is often the case after amputations, especially when the urethra is not properly handled.

The enormous size of the growth is shown in the second photograph which was taken immediately after the operation.

Canine, Feline and Avian Practice

Small Animal Clinic, Berlin Veterinary High School —Keystone View Co.

Incontinence of Urine in Small Animals

By Oscar Schreck, New Haven, Conn.

This troublesome condition, although common enough, is very difficult to handle because the cause can not always be determined and because drugs can not be intelligently prescribed until the cause is known.

Before planning the treatment, a careful examination aiming to seek out the cause must be made. Small animals should not be whipped for enuresis when the cause is some form of irritation, since the excitement makes matters worse. While essentially an affection of the young it is sometimes seen in mature animals. The condition may improve spontaneously but occasionally it continues until maturity, rendering the subject undesirable and offensive. It is usually for this reason he veterinarian is consulted.

The Etiologic Influences

When the cause can be determined the treatment is suggested. Unfortunately, however, the cause can not be disclosed and different treatments must be tried until the correct one is found. It is worth noting that incontinence from irritation may be prolonged by habit after the cause has been removed and that mere removal of this cause may not effect an immediate cure.

Dietetic errors, such as feeding young animals rich food, food hard to digest or food that causes indigestion, produce incontinence by making the urine irritating to the urinary tract. Then again intestinal indigestion (fermentation, gas, etc.) may produce incontinence by pressure upon the bladder.

Other cases are caused by hyper-acid urine irritating the cystic mucosa. This I find to be the cause in many cases coming to my notice.

To these causes must be added that of compelling young animals to hold the urine too long—longer than nature intended, excessive secretion of urine, and congenitally small or undeveloped bladder. It seems reasonable to suspect that the bladders of animals affected with incontinence while young do not develop to the required, normal size and thus prevent the condition from improving.

Cystitis of a mild character may also cause incontinence, although in mature animals this only causes frequent urination.

Constipation and coprostasis of the rectum may disturb normal urination, and then the abdomen should always be examined for new-growths that may press upon or involve the bladder.

If mucus or blood is found in the urine examination, with a history of pain or cystitis calculi may be suspected.

The rectum should be examined for parasites (Oxyuris vermincularis) which may sometimes invade the urethra and bladder of the bitch and queen.

Treatment of Incontinence of Urine

When any of the causes above described can be incriminated, the proper treatment of

the condition found to be the cause, if curable, will correct the incontinence.

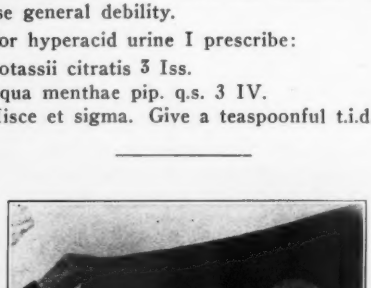
If due simply to excessive secretion of urine, the restriction of liquids may be sufficient treatment, but if the kidneys are involved, the enuresis though unfortunate, is less important than the disease causing it. But in such cases the quantity of urine can be diminished by the resort to proper food. When general ill-health is responsible the condition usually subsides as the health improves, and an irritability of the neck of the bladder and urethra is sometimes greatly improved by the use of atropin. For such purposes the dose should be large and administered twice a day, early in the morning and late at night. To obtain good results from atropin it must be given in sufficient quantity to bring out its primary physiological action after the animal's tolerance has been obtained. No preparation of belladonna will act as well as atropine in such cases. The dose for a pup is from 1/200 to 1/100 grains.

Nervous irritability or excitement following distemper or any condition in the region of the bladder receiving nerve impulses from the same source may cause the trouble by relaxing the sphincter. Ergot is the proper treatment in these cases. Ergot is a stimulant to the involuntary muscles fibers and a sedative to the central nervous system, and may this inhibit reflaxes.

Bromides are not advisable because they cause general debility.

For hyperacid urine I prescribe:

Potassii citratis 3 Iss.
Aqua menthae pip. q.s. 3 IV.
Misce et sigma. Give a teaspoonful t.i.d.



Many-Tailed Bandage for Dog

SUSPECTS "SAMSON FOX" IS DUE TO ACARIAN PARASITE

I am satisfied that the cases described below are what the fox ranchers call "Samson Fox." I see articles now and then in fox magazines describing it. The owners of the described foxes sent one of the diseased pelts to Washington, D. C., about two years ago, and received a letter stating they could not give cause but it was no doubt some kind of skin disease. I have certainly given this considerable thought and study and if I may hazard a guess I would say it is acariasis, squamous form, but understand it is only a guess as I do not know.

Animal—Blue Fox; Sex, Female; Age, 2 years.

History — Trapped Dec. 29, 1921, general appearance similar to two foxes trapped in 1920, and one trapped in 1919. The two foxes trapped in 1920 were destroyed immediately. The fox trapped in 1919 was kept in quarantine pen for one year before it was destroyed. Appetite and physical condition appeared normal throughout the year, no evidence of scratching, owners did not attempt treatment. There was no noticeable change in the fur during the year it was kept in quarantine. Regarding the condition of the fur of the three foxes,—The under fur is thick but short, guard hairs absent (same as a summer skin), tail similar to that of a house cat. The two 1920 foxes gave off a strong offensive odor unlike normal fox odor, the 1919 fox did not give off offensive odor. Both 1920 foxes were aged, the 1919 fox was two years old when trapped.

Symptoms—Physical condition good, appetite good, no abnormal odor, no discharge from eyes or nose, general appearance bright, bowels normal, temperature normal, teeth good, fur in same condition as the above mentioned three foxes—fur short and very thin on belly and guard hairs absent. Branlike scales (Seborrhoea) found throughout fur, especially on the back and at root of tail. Small dry scabs to the extent of about twenty, varying in size from a pinhead to a pea, located from the middle of the back to the middle third of the tail, very little inflammation surrounding scabs, no balt spots, **no signs of scratching**. There are no lesions on the head or ears, nor the feet and legs.

Treatment: I first clipped the animal and made several slides, especially from scrapings at the seat of the scabs (but the only microscope available was a $3.90 Sears-Roebuck affair

which was more of a toy than a scope) of course, my findings were negative. I next removed all scabs and painted seat of scabs with tincture iodin, the following day animal was dipped in strong antiseptic solution, and the next day was dipped in a solution of lime and sulphur, which I intend to repeat in ten days. At present the appetite is good, bowels normal, and from appearance one more dipping should clear up the skin.

(It is a fact that hook-worms infest foxes and sometimes cause trouble along these lines, but I have examined postmortem, for this ranch, the carcasses of forty foxes and found no evidences of hookworm, my findings were absolutely negative.) Another thing which I cannot understand, there are no evidence of scratching and no lesions around the head.

I certainly wished for you and your favorite microscope. Both Canada and the United States have veterinarians investigating fox conditions, strange why they don't put out something on the "Samson Fox."

ESOPHAGOTOMY IN A PUPPY

The patient, a fox-terrier puppy, five months old, was known to have eaten the remains of a cooked hare, and shortly after doing so it was noticed to be continually attempting to vomit. At the time little notice was taken, but the next day, when solid food was taken, similar symptoms happened. Liquid food was taken without much trouble. This went on for five days, after which the puppy was brought for examination.

Slight anæsthesia employed, and the obstacle was located with a probang just in front of the sternum. It could also be felt externally. With a long pair of forceps one could grip the foreign body, but being so wedged in the gullet it was impossible to withdraw it.

The following morning, after hypodermic injection of morphia and codrenine used locally, the animal was secured in the usual way and operated upon.

A skin wound about 3½ inches was made, and after careful dissection immediately over the object it was eventually reached. A little swelling was encountered, probably due to the interference with forceps the previous day. After removal of the foreign body (a neck vertebræ of the hare with several spikes, which obviously caused it to be so firmly stuck in the œsophagus), the œsophagus was closely sutured, then the muscle, finally suturing the skin. The following day the operation wound became very foul and septic, and, as most of the stitches had given way, the others were removed. The wound was well washed with Dakin's solution and filled with a mixture of calc, chlor, and boric acid, the dressing used throughout the case. In two days the wound put on quite a healthy appearance.

Water was allowed at intervals, but it all came through the wound until the morning of the sixth day after the operation, then only a few drops, the leakage stopping entirely at night, when he was put on to bread and milk, well mashed, and so continued to make a good recovery.

Up to the time of closure of the œsophagus rectal meat suppositories were used to keep the patient's strength up.

The case has had a very satisfactory termination.—R. A. Phillips, Vet. Jour, Feb. 1922.

CANINE PARAPLEGIA

During the years 1905-1909 at the U. S. Quarantine Station, Blackbeard Island, Ga., a disease known locally by the name of staggers was observed among a pack of hunting hounds. The name described accurately the early symptoms of the disease.

In the early stages the dog had a very characteristic gait; the hind quarters owing to weakness of the muscles, were very unsteady, causing lurching from side to side, with stumbling in the hind feet. The weakness steadily increased until finally the dog was unable to stand up, but dragged himself about by the forequarters, with total loss of power in the hind quarters, which dragged along the ground. No incontinence of urine or feces was observed.

On examining dogs thus affected it was found that the inner surfaces of the ears, especially those portions free from hair, were covered by masses of wood ticks so firmly attached that artery forceps were required to remove them, and in doing this some of the epithelium was detached also, where the buccal capsule had been attached.

Dogs heavily infected with ticks developed paralysis quickly. The severity and rapidity of onset of the paralysis was closely associated with the numbers of ticks adherent to the ears in each case. Solitary ticks attached to dogs, although gorged with blood, caused no demonstrable symptoms of paralysis. When no other means than the removal of the ticks was employed, the paralysis rapidly disap-

peared, the dogs regained their former health, and they were able to hunt as well as ever.

Cattle roaming the woods throughout the year were singularly free from ticks, only an occasional solitary gorged tick being found. None of the cattle developed paralysis during the five years during which they were observed. Wild deer and wild ducks were free from ticks. The wild deer apparently would have the same opportunity to pick up ticks in the woods as the dogs. Some raccoons which were captured were free from ticks.

Human beings were rarely attacked by ticks; when they were, a solitary tick could be found in each case. On human beings a favorite point of attack was between the shoulder blades where the tick was difficult to reach, and an annoying itching sensation was experienced, accompanied later by pain and inflammation. On removal of the tick, the symptoms rapidly disappeared.—M. K. G.—Md.

PANTING IN DOGS

I would like to ask your advice about a dog I am treating.

Subject: Bull dog, seven years old, weight about 30 pounds.

I was called to see the patient on November 5th, and on examination found the temperature, mucous membranes and appearance of the eyes normal, but the respiration were about 110 per minute. The thorax seemed normal on percussion.

History: This rapid breathing came on suddenly some three weeks ago. For exercise he was given freedom by means of a wire and pulley. Neighbor boys would throw stones and sticks to see him run for them until he would be quite warmed up and panting, then he would lie down in the shade. He emaciated rapidly even as the appetite remained normal. He would not go to the basement to sleep as before without being forced, and would howl to return. He would fall asleep in the sitting position and on awakening would fall over and run around the room.

Bowel movements were as regular as usual. Another veterinarian had told them the collar was too tight and they had removed it two weeks before, with no improvement. Walking did not aggravate the rapid breathing to any great extent.

To sum the case up, rapid breathing was the only thing I could observe that was wrong with him. There was no double exhalation, but just a rythmic abdominal breathing with no abnormal respiratory sounds. The nostrils were dilated.

Is this a partial occlusion of the trachea or bronchi, or is it an affection of the pneumogastric nerve?—M. B., Pa.

REPLY: Your dog is affected with some functional disease of the heart. I would recommend that he be kept away from any excitement and given such heart stimulants as you deem advisable.

Very rapid breathing in the carnivora can occur from only three causes: excessive heat, either from fever or external thermic influences; diseases of the lungs; or diseases of the heart.

It is among these that you must search for the diagnosis. Since you seem to have excluded the two former in your description, we are inclined to believe that the heart is the organ to incriminate.

BRAIN LESION IN A DOG

Will you kindly give me some information on the following case?

A client brought me a black male pointer, four years old, for treatment. Three days previously the dog began turning in circles to the right. Nothing else abnormal was noted. On examination I found a temperature of 103.5° F., heart very irregular and 85 per minute. Respiration normal. Countenance of dog seemed to be normal and bright.

The most noticeable condition was the turning to the right and at times barely able to stand. Weakness seemed to be manifested to a greater extent in right hind limb. Further observation discloses that his appetite is normal and bowel and bladder movements are normal. The dog lies quietly part of the time but on attempting to move goes to the right.

I made a tentative diagnosis of partial paralysis, gave castor oil and placed him on a course of potassium iodid. It is not known whether the dog has had distemper.—J. H. B., N. C.

REPLY: The condition you describe is due to a lesion of the brain on the opposite side to which the dog turns. Just what is the character of the lesion, of course, cannot be determined except at the autopsy. It often follows distemper.

If it is chronic, we fear that you will not be able to effect a cure. The ordinary nervous stimulants such as strychnin given in carefully prepared doses, and a regimen of potas-

sium iodid continued for a period of time might be helpful.

PARALYSIS SIMULATING DUMB RABIES; RECOVERY

I am writing for a little information and hope that you can help me. I was called to see an Airedale dog on September 15, 1920. The dog's pulse, temperature and mucous membranes were normal; the lower jaw had dropped and the dog was unable to close his mouth. He was examined for foreign bodies in the mouth but none were found and the mouth was in good condition.

On September 15th the dog was sent to my hospital as the owner was unable to adminster the medicine. My diagnosis was paralysis of the jaw. The dog was given 1-60 of strychnine sulphate, three times daily and was discharged October 2, 1920.

October 21, 1920, I was called to see a small spitz dog that had been ordered destroyed for dumb rabies by another veterinarian. As there were no symptoms of rabies and the dog had been sick about a week and the symptoms were the same as the Airedales', my diagnosis was the same and the dog was given 1-120 of strychnine sulphate, three times daily, and was discharged November 5, 1920.

Case No. 3 was a small shepherd pup about 9 months old. This dog entered the hospital on February 16, 1921, and had been sick about two days. This pup had the same symptoms as the other two, the lower jaw dropped and he would lick his front paws all the time, but which he stopped doing after entering the hospital.

On examining the patient I found the mucous membranes normal, tongue slightly congested and a large red spot on the upper portion of the left eye ball. In examining the left side of his head he would try to push my hand away with his paws. He was in much more pain than the other two and all liquids given him would distress him; he would press his nose against the door of his kennel and then go around rubbing his nose on the floor. Strychnine sulphate given hypodermically would ease him and he would quiet down for about 1½ hours. There was no paralysis of any part of his body excepting the jaw.

This dog died on February 18th about 11:00 P. M.

Were all cases paralysis of the lower jaw? Would a blow on the head cause the red spot in the eye and the other trouble? There were no bruises on the head.

In the history given by the owner the dog had never been bitten and the trouble came on very suddenly.

I trust you will be able to give me some information on this subject.—J. W. G., Utah.

REPLY (By Dr. Quitman): In reference to your query regarding the three dog cases, will say that symptoms shown in these dogs may be due to three conditions, paralysis, dumb rabies and typhus. In cases No. 1 and No. 2, the fact that these animals recovered would tend to preclude dumb rabies and if there was no foul and almost characteristic odor to their breaths it would also preclude typhus and especially so, if the mouths, as you say, were found in good condition.

Consequently it would bring these two cases down to a pure paralysis, the cause of which I am unable to give. Case No. 3 we fully agree with your conjecture, was a paralytic condition of the lower jaw. In this case, together with the other symptoms shown, points strongly to the possibility of this dog having received a powerful blow upon the head. It is my experience that the head of the dog will stand a powerful blow, especially if it lands on the parietal muscles, without showing a swelling.

Your treatment was entirely rational. The only suggestion we are able to make is that should you have any more of these cases and the paralysis persists, recovery may be facilitated by the addition of potassium iodid to your treatment.

It is an old belief that sex can be regulated in cows by mating at the first possible opportunity after bearing a calf. The issue will be the same sex as the last one, it is claimed.

An appropriation of $25,000 has been approved by the Governor of Alabama for the Pasteur treatment of dependent persons bitten by rabid animals.

It has usually been supposed that rabies was always fatal. In a recent article in the "Journal of Infectious Diseases," it is stated: "Spontaneous recovery from rabies naturally acquired, while rare, does occur." The saliva of cases of rabies that recover has been demonstrated to be virulent.

CHICKEN CHOLERA

I would like to have information about a flock of chickens under my charge. The flock is kept under ordinary farm conditions and is composed of about 400, of all ages. Thirty have died during the last week.

At first, about a month ago, the sick ones were said to make a kind of wheezing noise in breathing and for this the whole flock was given permanganate of potassium in the drinking water, but during this wheezing period none died.

The first noticeable symptom of those now sick is lameness which becomes very painful before they die. It is so painful that some of them hardly use their limbs at all.

Some of them have white colored, loose stools and very few of them eat or drink much.

The comb and wattles are cyanotic, eyes closed and head and tail drooped. The mouth is held open and at times some of them sneeze.

They are feed cracked corn, barley, oats and wheat, all of which are in good condition.

All ages seem to be affected. The autopsies thus far held reveal nothing more than small petechial spots in the heart membranes. What treatment do you recommend?

REPLY. The syndrome presented consists of lameness, cyanosis, white diarrhea and the inappetence of cholera, and the autopsies seem to confirm this. It would, however, be best to have specimens examined by a laboratory. On the other hand, we believe that there is some nutritional disturbance because the pure grain ration of this flock is not a balanced one. They should have meat scraps or tankage and minerals to make up a balance. It so often happens that chickens are affected with more than one disease at the time, the one contributing to the development of the other.

As a consequence, the practitioner who must in his own protection make a diagnosis then and there, without the aid of a laboratory, is without other recourse than that of correcting all existing faults in the handling of the flock, in order that each of the two, or even three, diseases suspected are safely covered until a diagnosis can be made either by additional clinical evidence or by a laboratory confirmation.

By a careful study of Beaudette's symptoms table on page 137 of the March issue, a practitioner should be able to come pretty close to a sound decision in any outbreak of fowl diseases, and from this decision arrive at an equally sound plan of management and treatment.

The things that are always in order are: (1) Separating the sick from the flock, or, better still, killing and burying them. (2) Thorough disinfection of the coops. The runs can not generally be handled under farm conditions because these constitute the whole ranch, or at least that part surrounding the buildings. Where there are small runs, however, these can be plowed, spaded or limed. (3) Prescribing a proper ration. (4) Flock medication by means of the drinking water. In this connection we have always found sulphate of iron or, better still, the proprietory remedy known as Fer-Sul which, consists of a 46% solution of ferric sulphate in combination with sulphuric acid, a byproduct of the steel mills. One per cent of these or of copper sulphate are never far amiss as correctives of fowl plagues until biologics after the disease is actually diagnosed become indicated.

WAREHOUSE CATS DIE

I have a client that has a large flour and feed business, who has been trying to raise cats for the past five years to rid his place of rodents.

When the cats reach the age of six months and begin to catch rats and mice they fall sick, get very dull, start vomiting, and then die. These cats never leave the feed store. Would it be possible that they eat too many mice?

Any information that you could give along the line of prevention would be gratefully received—**C. A. K., Ont.**

Reply: The trouble with these cats is lack of balance in the ration. It is impossible to raise cats without allowing them some food in addition to that which they forage from an enclosed environment. After a cat arrives at the age of one year or more and is allowed to run about out-of-doors they do very well without any particular attention to feeding, but they require attention until they reach the period of maturity. These young cats should be fed milk once a day—all they will drink. If you could procure fresh, skimmed milk right from the cream separator, it would not only meet all requirements but being an incomplete ration in itself would not entirely destroy the appetite for rats and mice.

It is, of course, essential that the feed store be examined carefully for any poisons that

might be lying about. It is the practice of many country warehouse men to sell all kinds of poisons, such as fruit tree, shrubbery, and potato spraying materials that make their establishments dangerous places for cats and dogs.

TAPE WORMS

Notwithstanding their extreme frequency, the taeniae often have no apparent influence on the health of the dog. Sometimes, however, by their accumulation and intestinal obstruction they cause abdominal pain or a chronic enteritis.

Young dogs are uneasy, change their position frequently and show desire to bite the skin over the abdomen. They may have epileptiform attacks, which are periodical with normal intervals between. When frequent, these attacks may be followed by a gradual sinking and death.

Taeniasis of Cats, Rabbits and Fowl

The Taenia crassicolis of cats is frequently found in large numbers in the small intestines and occasions serious disease. The appetite gradually declines. A slight diarrhea is an early symptom followed by constipation; salivation is abundant; great prostration; nervous phenomena as loss of sight and hearing, and epileptiform convulsions which occur at intervals.

Rabbits exhibit symptoms similar to the cat, except the former usually have a partial posterior paralysis instead of convulsions.

Fowls lose their appetite, become emaciated, are dull and feeble and a few show diarrhea. The presence of segments on the surface is often the only symptom of taeniasis.

Kamala (dogs 3.0-10.0; cats 1.-4) is also good; it also produces a good purgative action. **Areca nut** powder is often used and is given in doses of two grains per pound weight of the animal. It may be given with soup, ordinary food or milk, after the bowels have been emptied by a purgative. Areca nut powder may be repeated in a few days.

Rabbits may be given kamala (0.5-1.0) in the feed. Birds are best treated for taeniasis by mixing areca nut powder (chicken 2.0; geese 4.0; young chickens 1.0) with the feed. **Oil of anise** is also good, and can be administered in 0.9-1.0 doses to adult birds.

—O. V. Brumley.

MOTHER GOAT ADOPTS AIREDALE PUPPIES

An interesting fact was recently disclosed by a camera man when he found that a mother goat on the ranch of Glenn T. Braden, a millionaire oil man at Tulsa, Oklahoma, had adopted eleven Airdale pups. The mother of the pups became suddenly ill after birth of the pups and at the same time a mother goat lost its kid, so Braden placed the pups with the goat. At first the goat rebelled but finally allowed the pups to nurse standing up. However, after a week had elapsed, the foster mother lay down and allowed her pup family to enjoy their meals at all hours in the natural position for that species.

MINERALS FOR LIVE STOCK

(Continued from Page 162.)

that will answer requirements as to mineral substances may be made by mixing: 50 pounds of common cattle salt, to supply the sodium chlorid, with 150 pounds of steamed bone meal or finely ground limestone, to supply the calcium. Four pounds of this mixture may be added to each 100 pounds of the grain fed. If desirable, the salt may be fed separately especially to dairy cows which need about one and one half ounces daily.

The suggestion has been made that it would be well to add potassium iodide to the above mixture as a means of controlling goiter, hairlessness in pigs, and actinomycosis. We doubt the advisability of doing this, primarily because all animals do not need iodine, secondly because it would be harmful if fed throughout the gestation period, and thirdly because it would be a waste of money.

Meig's and Woodward's Experiments

In connection with the subject it is interesting to note the recently reported results of experiments with cows conducted by Meigs and Woodward of the U. S. Department of Agriculture. They have shown that the amount of milk yielded by a cow largely depends on the changes that go on in the udder for sometime before her calf is born. These changes vary with the state of nutrition in which the animal happens to be during the few weeks immediately preceding parturition. They administered sodium phosphate daily during the dry period to cows, which had been fed an ordinary maintenance ration, with the result that there was an increase in the milk yield of about 35 per cent over what they had given in previous years between the 10th to 40th day after calving.

The number of cows under experiment was small, so no conclusions as to the general feeding of phosphorus have been advanced.

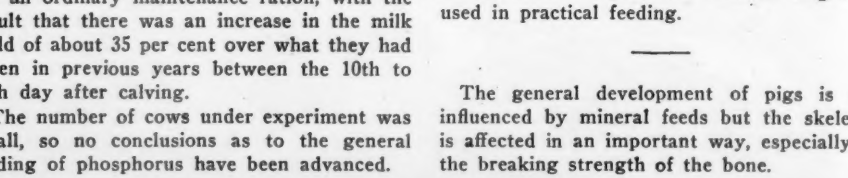
Professor Hart's Opinion of Sodium Phosphate

Professor E. B. Hart of the Wisconsin College of Agriculture thinks it would be unwise to advise feeding sodium phosphate generally until more has been learned about its use. Since wheat bran is amply supplied with phosphorus and is widely used as a dairy feed he thinks it may meet the requirements of animals for this mineral. Investigations are in progress at several agricultural experiment stations to learn more about the effects of sodium phosphate for cows. The reports of the results of these experiments will be watched with interest.

According to Market Reporter, the number of turkeys on farms in the United States on Jan. 1, 1920, was 3,627,028, compared with 3,688,708 on April 15, 1910; the number of ducks in 1920 was 2,817,624, compared with 2,906,525 in 1910; and the number of geese in 1920 was 2,939,203, compared with 4,431,980 in 1910. These figures have been announced by the Census Bureau.

According to Forbes and his collaborators, the alkali reserve of the blood supply of swine may be increased by the feeding of the potentially basic precipitated calcium carbonate or decreased by the feeding of the potentially acid precipitated calcium phosphates when these substances are fed as supplements to a cereal ration in quantities such as might be used in practical feeding.

The general development of pigs is not influenced by mineral feeds but the skeleton is affected in an important way, especially in the breaking strength of the bone.



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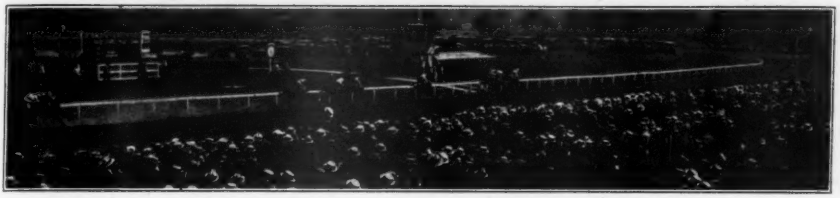
Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE



Horse racing is an out-door sport that entertains and maintains thousands. It is an industry that develops fundamental resources—an ally of agriculture, the enterprise upon which our prosperity almost entirely depends. The horse in any of its estates is a component part of a great, big, prosperity-producing host of which the automobile is a parasite.

Cooperation in Live Stock Disease Control

By W. T. Spencer, Omaha, Nebraska

THE best definition I have seen for the term "cooperation" was given in the Weekly News Letter of the United States Department of Agriculture a year or so ago. It defined "cooperation" as meaning for us to work so that the other fellow could work with us. The plan of controlling livestock diseases in this country is such that a close unity of the cooperating agencies is very necessary for best results.

The first thing, I think, should be the enactment of practical laws from which to base regulations for carrying out the plans and policies that are deemed necessary, depending somewhat on the location of the country in which the work is being done. The laws should not be too specific, but should be quite general, leaving to the administrative officers the opportunity of making regulations to suit conditions.

If this be done it is, of course, very necessary that officers filling such positions must be chosen with great care. They should be qualified by training and experience, and one of the chief qualifications should be their ability to work with the other fellow—unfortunately they are not always chosen according to these specifications.

Official veterinarians should be cognizant of the fact that they are public servants and that their endeavors should be with the thought of administering their work; not to suit the whims of the individual, but in the interests of the livestock industry at large. No man should be chosen for a position of authority unless he is particularly interested in the work over which he is placed and has a good general knowledge of it. If his heart is in the work he will study his job and make every effort to better inform himself so that he can render better service.

The Influence of Human Nature

Human beings like to think they are free agents, and this human trait of being highly developed in some people causes them to resent what they call "interference with their personal liberties." In having someone attempt to advise and instruct them how to handle what they believe to be "their own business" is one of the common obstacles met in sanitary control work, especially when new steps are taken or when drastic requirements become necessary, such for example as are needed in controlling an outbreak of foot and mouth disease. This resentment is more often met with, I believe, where the administrative officer has the reputation of being glad of an opportunity to show his authority. I realize of course that there are times and certain characteristics of man that require handling with force, but the point I am wanting to make is that the work should be so administered as to lead the public into full confidence in the fact that it is being done in their interest and for its protection. People are quick to discover our real attitudes and desires and the public is a fair referee, deciding our

cases on their merits, rejecting us if we prove unworthy, and demanding increased service if we are valuable.

Cultivate Cooperation with the Stockman

Without the stockman's cooperation it would be almost useless to think of controlling and eradicating a widespread disease such as tuberculosis. To secure their cooperation, they must be interested and to become interested they must have some knowledge of the disease, and the more information they have as to its infectious nature, the manner in which it spreads, the effect it may have on their welfare, the sooner will they be ready to render assistance. This has been clearly demonstrated in the tuberculosis eradication campaign that has become so popular that it is difficult for the Federal and State governments to devise plans for handling the work fast enough to keep up with the demand for tuberculin testing. I think this is due to a great extent to the wide publicity that has been given the subject and the general knowledge the public has relative to tuberculosis.

Heavy losses amounting to millions of dollars annually resulting from condemnation of carcasses, or parts of carcasses, from preventable disease, prompted the important livestock exchanges throughout the country to organize sanitary committees and employ Livestock Commissioners to devote their time to animal disease control work. The larger percent of this loss is due to tuberculosis and it is thought that assistance can be given the Federal and State officials in controlling this and other diseases by helping to extend general interest in the care and treatment of domestic animals and in developing favorable public sentiment.

The practicing veterinarian has had much to do with the development of this condition favorable to tuberculosis control and it is right that he should, for he is, or should be, the one to whom the stockman looks for such information. The veterinarian should be in a better position than almost any other man to render community service in a country district and should, I believe, take an active interest in all community affairs, looking toward the betterment of conditions. This helps him to become established with the best class of citizens and aside from the commercial advantage gained, it brings to him the satisfaction that comes from the knowledge that he is doing his part in helping to make that community a better place in which to live. I think the veterinarian should show special interest in helping to promote livestock organizations, boys' and girls' clubs, fair associations, cow testing associations and other organized efforts in behalf of better agriculture.

Our business is largely commercial and we must eventually leave the farmer with the balance in his favor if we continue to do business with him. In these days of preventive medicines great stress should be laid on the importance of sanitation. If properly educated, the stockman should be more willing to pay for information and advice that will prevent his stock from contracting diseases than he would to pay for the treatment of sick animals. It is true that in some localities the practitioner has failed to grasp the significance and the importance of the educational campaigns in livestock disease control work that have been put on by the federal and various state governments, and has looked upon these programs as interfering with his rights and taking away work that rightfully belongs to him. This disposition on the part of some of the veterinarians has, in a way, prevented the practitioner from taking the place he should in these programs.

Governmental Activities Helps the Practitioner

When the federal government inaugurated the hog cholera control work and placed in the various localities veterinarians to supervise it, there were some practitioners and other veterinarians who said the government was infringing on their business and eventually would take over all of the work in connection with immunizing hogs for cholera. But did this happen? It did not. The same argument has been advanced by the same people, that the federal and state governments would soon be doing all of the tuberculin testing of cattle but the indications are that this will not come true. But it is true, I believe, that a very large percent of the practicing veterinarians' business today is from the calls from these two sources, due chiefly to the educational work done by the sanitary officials. The test of the right kind of methods is in their success, and the manner in which this important work has been received indicates the practicability of the methods used.

I want to quote some figures showing the comparative amount of tuberculin testing the practitioners have done in Nebraska since the first appropriation was made in the state for the cooperative work in January, 1919. There were tested by private practitioners during that calendar year 2,231 herds, having total of 10,673 cattle; in 1920, 7,640 herds, having a total of 30,169 cattle; in 1921, 10,339 herds, having 41,138 cattle. In the three years that the

cooperative work has been operating in Nebraska the tuberculin tests applied by private veterinarians have increased, as you will see, from 10,673 cattle for the year 1919 to 41,138 cattle for 1921, and this is only an indication of the important part that the practicing veterinarian should, and will play in the eradication of tuberculosis.

There can be no doubt, it seems to me, that the local practitioner must be the backbone of this or any other program of animal disease control work undertaken, and we have been repeatedly advised by the men in charge of tuberculosis eradication that it has been the intention from the start to build on such a foundation—so let us get together, pull together and work together. Let us work with, rather than against each other. There has been a tendency for a few of our number to stir up strife between the veterinarians and some of the representatives of certain agricultural organizations.

Antagonizing Agricultural Interests Unwise

I refer particularly to the County Farm Bureau. No doubt some of these men have over-stepped their authority and have done things they should not have done, but I am of the opinion that if such conditions exist, the adjustment should be left with the officials who are charged with the responsibility and with the individuals directly interested, rather than to have someone who thinks he will profit by keeping up such agitation try to dictate the manner in which they should be handled.

As I stated previously in this paper, the public is quick to discover our real attitude—we are dependent almost entirely upon the success of the agricultural interests for our success and I do not believe we can antagonize an organization that is made up of farmers, backed up by the U. S. Department of Agriculture, and still claim our interest in the farmer's success. The same interests referred to above have spent a great deal of energy in an endeavor to bring distrust into our own family and break down our own organization by attacking some of the men that have been placed in positions of honor and responsibility.

The point that I want to emphasize in this paper is that it is time for the veterinarians to get closer together and carry out some of the constructive work that has been outlined by the federal and state livestock sanitarians. I think this understanding of each other—for that is all that is needed in getting closer together—can best be brought about through local organizations where we, as neighbors, can meet and discuss our problems, and these local organizations can extend their usefulness by inviting the stockman to meet with them.

Mutual Understanding Our Salvation

There is a small organization of veterinarians in Nebraska known as the Central Nebraska Veterinary Association that has been following out a plan of this kind for the past two or three years, inviting the breed associations and farmers to hold an annual meeting on the same date and place and holding a joint session some time during the meeting. Their annual banquet has also been a joint affair and the plan has proved a decided success.

How long would a successful commercial enterprise permit one of its salesmen to continue on the road whose chief stock in trade was knocking a competitive line? For instance, some piece of machinery that they were both trying to sell. Such a practice would tend to impress the prospective purchaser with the faults of the machine, rather than with the merits of either, and would probably result in his refusing to buy either one. I think the same principle will hold good as to the practice of veterinary science. I have noted as a general rule where two practitioners are located in the same town pulling together and boosting each other honestly, that they are both enjoying a good practice and have a high standing in the community. The reverse is most generally true where they are at loggerheads. Internal strife will do more to disrupt and tear down our profession than all outside influence combined can do; if we come to this realization we will not have much difficulty in getting together and putting our profession on the plain it justly deserves or in putting across any program of controlling livestock diseases that may be considered advisable.

SKIM MILK CAUSES TUBERCULOSIS IN YOUNG CATTLE

One man in New York was feeding all the skim milk his young cattle would take. These young cattle were all yearling and two year old heifers, pure bred Holsteins. The milk was not pasteurized. Every one of the heifers that drank this milk reacted to the tuberculin test, 15 in all, and every one which had refused to drink it, about six, passed the test. There were 48 head in this herd. None of the main herd reacted. The milk is clearly the source of infection in this herd. All these heifers were very choice ones; $3,000 would have been a small price for them.

Bath, N. Y. **Dr. C. C. Walker.**

TREATMENT IN BOTULISM

This is the report of a critical study of the literature on botulism and an extensive investigation of the causes and possible methods of treatment of the disease. The possibility of botulism resulting from the ingestion of toxin-free organisms is discussed in considerable detail, both from the literature and from the results of experimental inoculation of rabbits.

Toxin-Free Organisms Not Pathogenic

"The major evidence as we have presented it here favors the view that botulism in man very rarely, if ever, occurs following the ingestion of toxin-free organisms. The available evidence is too inconclusive to form the basis for any definite conclusions. Many of the facts presented can be explained in more than one way. Our own belief is that infection in human beings following the ingestion of toxin-free organisms never occurs. We are inclined to believe that the organism does produce toxin in the alimentary tract following the ingestion of preformed toxins and after paralysis has set in. Treatment of the digestive tract should be designed to neutralize and wash out the toxin and inhibit or destroy the organisms."

Vigorous Boiling Required to Kill the Organism

A practical point brought out in this connection is the necessity of prolonged boiling of suspected food. Experiments are reported which indicate that spoiled canned foods giving the appearance of boiling for 7 minutes and subjected to actual boiling for 4 minutes are not safe to eat, and also that spoiled canned foods exposed to a temperature of 80 degrees centigrade for 1 hour may appear to be boiling part of the time due to the evolution of gas. Vigorous boiling of all suspected foods for at least 30 minutes before tasting is recommended.

Antitoxin Must be Given Early

Experimental work on the extent to which antitoxin is effective in preventing death has shown that to be effective it must be given in excess before or very soon after the symptoms appear. The serum should be polyvalent, bacteriolytic as well as antitoxic, and should be injected intravenously. Tests of the effect of various foods on the appearance of the symptoms and on the death rate of botulism indicate that slight protection is afforded by substances such as oil or milk which retard the rate of absorption of the toxin. Certain substances including sodium hydroxid, potassium permanganate, and liquid soap appear to have a neutralizing action on the toxin. In conclusion recommendations are given for specific and general treatment of the disease.—V. Burke, J. C. Elder, and D. Pischel (Arch. Int. Med., 27 (1921), No 3, pp. 265-304). Ext. Exp. Rec.

IN RE CRIBBING AND WINDSUCKING

At the January meeting of the New York City Veterinary Association the matter of cribbing and windsucking horses was discussed at length, the subject having been awakened through the interest in a lawsuit arising out of the sale of the thousand dollar horse, "Play Boy," which was alleged to be so affected.

Dr. George Berns of Brooklyn, one of the oldest practitioners in this country and whose knowledge of equine problems would not be questioned by anyone, seriously doubted the possibility of a horse swallowing wind, basing his opinion on the fact that he has never seen a case of flatulence occasioned by windsucking.

Dr. C. W. Shaw expressed a belief that a horse could swallow wind, clinching his opinion with the fact that a woman of his acquaintance could and did swallow air.

Dr. W. H. McKinney doubts if a horse can swallow air and believes that a horse cribs because of tooth irritation.

Dr. Slawson thought a horse might accomplish the feat while eating and drinking.

Dr. Gannett believes that horses do suck sufficient air to cause flatulence.

Dr. Reed Blair stated that the question of swallowing air by horses was regarded of such importance when he was at college that a committee of students was appointed to study the question.

Dr. McKim was skeptical about a horse being able to swallow air and thinks that bloating in cribbing horses is due to some other cause.

Dr. Ackerman reports having seen two aged horses that actually swallowed air.

Dr. Higgins thinks it possible that an anomalous palate might make it possible for individual horses to become true wind suckers.

Dr. A. J. Paddock, on the contrary, claims that the large velum of a horse actually aids air swallowing.

Dr. DeVine believes that if a horse attempted to swallow air it would be expelled through the nose.

Quitman says they do swallow wind. Veterinary Medicine says they do not—so take your pick.

Queries and Answers

COAL SLACK SUSPECTED OF KILLING HOGS

I am desirous of information relative to a condition that is existing in some sows and pigs.

History: A client had 9 white sows and 47 pigs on one farm and 5 sows and about 30 pigs on another nearby farm. These hogs had not been vaccinated. The sows and pigs were all doing fine, they are being fed corn and oats and on January 10th, they were all fed some coal slack, excepting one sow and her pigs. About January 15th, some of the swine appeared to be sick. On January 19th one sow died.

Post Mortem: The sow that died on January 19th was carefully autopsied and the following lesions found: Mammary glands swollen and there were many small crater-shaped ulcers in the skin of the abdomen. Cervical lymph glands black, apparently due to a deposit of carbon. There was an intense inflammation of the gastric and intestinal mucosa.

January 21st another sow and two pigs were autopsied. They evidenced the same lesions as the sow autopsied on the 19th. All of the remaining sows and pigs were noticeably affected at this time, except the one sow and pigs that had not received the coal slack.

February 9th, I was called again and autopsied a large boar and found the same lesions as before mentioned and in addition there was a purulent cystitis and some pneumonia.

Practically all sows and pigs that obtained the coal slack became affected and the one sow and her pigs that did not eat any of the slack remained healthy.

An early reply will be appreciated.—J.A.C., Ill.

Reply by Dr. Kinsley: The description you have given would appear as though the disturbance in the swine were of dietary origin. The length of time between the feeding of the coal slack and the first symptoms would suggest infection and it is possible that the food (coal slack) diminished the resistance and thus permitted of a secondary infection.

It is doubtful if the crater-like ulcers have any significance in the occurrence of the disease you have described. The discolored lymph glands could be caused by the deposit of carbon from the coal slack. The occurrence of pneumonia and cystitis in the boar was probably the result of complication. The gastro-intestinal inflammation was probably the important lesion.

It is not possible to make a positive diagnosis but will make the following suggestion. The cutaneous ulceration that you described may be due to the so-called measles which has prevailed more or less through the corn belt during the last two or three years. Measles, as you know, is rarely fatal and if it did exist it was only of secondary importance. The principal disturbing factor was gastro-enteritis and no doubt infection was a factor, although it was probably secondary to dietary disturbance.

The suggestion for treatment would include a change of diet and provision of good clean comfortable quarters. In addition mixed bacterin would probably be of value.

INCIPIENT POLL-EVIL WITH NERVOUS COMPLICATIONS

I treated a mare about one year ago appearing to be affected with poll-evil but which seemed to recover after a course of blistering. This mare during the period of blistering appeared to be very nervous about the head, throwing it first one way and then the other, and although she eats and drinks well she remains very nervous.

I also had another mare that showed no swelling at the poll, but for some time showed the same nervous symptoms, repeatedly shaking the head and ears. Any information as to the cause will be appreciated.—**C. A. K., Ont.**

Reply: There is nothing unusual about the disappearance of poll-evil swellings. Sometimes the swellings never return and at other times they reappear after the condition seems to have been entirely cured. The fact that this animal continues to show uneasiness about the head would indicate that trouble still exists.

It is doubtful if the second case you described ever had poll-evil. We are more inclined to believe that she is slightly epileptic.

TORTICOLLIS IN A JERSEY COW

I was called this morning to see a cow seven years old, a Jersey, due to calve in a short time. Her head was drawn to the left and there was a large distension on the right side of the neck. Temperature normal, pulse normal and she eats the same as she always did and gives just as much milk. She has been this way for five days and the client has been using liniments on her neck.

She has been kept in a small lot and a box stall. There is no other stock around her. Would you call this a contraction of the muscles on the left side or a disarticulation of the cervical vertibrae? The distension on the right side is hard and she cannot straighten the neck.

Please give me your opinion as soon as possible. She is a good cow and I would like tc cure her.—M. D. M., Illinois.

REPLY—The cow is affected with torticollis, either traumatic or rheumatic. As you do not give any history, we could not venture a closer diagnosis.

It will be necessary for you to get this cow on her feet and to construct some kind of support to the head that will enable her to remain in a standing position without agony. If she is unable to stand, she is probably doomed.

On the other hand, if it is found possible to keep her standing at least part of the time, you can expect that the condition will gradually improve. It will, however, require five or six weeks before the trouble entirely disappears.

This is not an disarticulation of the cervical vertibrae, but is often described under the name of pseudoluxation.

I would advise the administration of salicylates presuming that the condition may be rheumatic.

MASTITIS AND ROPY MILK

About the middle of August, I was called to see a cow (a grade Jersey) that gave stringy milk out of her left back quarter of udder.

About two weeks later, three others of the same kind developed similar conditions.

Mastitis vaccines were used on these three, two of whom lost the entire udder from abscessation. The first one without receiving vaccine, was almost well when the other three fell sick.

I would like to know the cause and also what line of treatment you would suggest.—W. A. B., Ohio.

REPLY: Stringy milk (usually called ropy milk) is caused by a bacterium that finds its way into the milk buckets or other containers. The bacterium does not in itself produce mastitis but often where mastitis exists the two conditions are due to the same cause, namely, bad sanitation. The milkers do not exercise proper care in doing their work.

When mastitis occurs in a number of animals simultaneously or consecutively, the effected animals should be isolated or at least milked separately after the others have been milked, and everything possible must be done to prevent it spread, in obedience to the general rules of quarantine.

The treatment of mastitis may be summarized as follows: (a) active purgation; (b) mixed mastitis bacterins; (c) support udder with a sling; (d) cold applications followed later with camphorated oil; (e) administration of formalin internally, two drams in eight ounces of mineral oil three times a day; (f) drainage of the milk sinus, by milking, by intubation, by amputation of the teat or even by bold lancing.

CURES TEXAS FEVER

I am outlining a system of medication for Texas fever that has proved successful in 90% of the cases attended. I am sure this will be of value to veterinarians in tick infested territory, especially where a client has purchased a valuable pure bred bull or milk cow and a call if received indicating that the animal is affected with this disease, which is usually thought to be incurable.

Case Number 1. Pure bred Jersey cow. Temperature 108° F. Pronounced hematuria. Weakness in hind quarters. Excessive salivation. Diagnosis tick fever piroplasmosis.

Treatment: 25 grains of quinine and urea hydro-chloride in broken doses subcutaneously. This is given with one grain of strychnine hpyodermically.

The constipation is treated with one pound of Boro-lax and this is followed with the following prescription:

Fluid extract nux vomica.
Fluid extract gentian aa 2 ounces.
Aqua q. s. ad., 32 ounces.
Mix, sig. 2 ounces T. I. D.

This is all the treatment necessary unless the bowels refuse to function, in which case a half

gallon of linseed oil in 15 drops of croton oil are indicated.

Case Number 2. Pure bred Jersey bull. Yearly. Shipped from Iowa. Down on the ground and unable to rise. Same treatment was given as outlined in case number one. Complete recovery.

Case Number 3. Pure bred Red Polled bull. Same symptoms and treatment as number two. Complete recovery.

I could recite quite a number of cases that appeared hopeless but which recovered from the above line of medication.

G. E. E.

Waynesboro, Miss.

HEMORRHAGIC SEPTICEMIA. PNEUMONIA FROM DRENCHING

The bottle I am sending you, contains the heart blood of a cow that died from pneumonia. I would like to have it examined for bipolar organisms.

On August 20th two cows showed symptoms of stiffness in the hind legs, temperature 101° Fahr. and a very low pulse rate. On the following day both seemed to have recovered. The stiffness had disappeared and they ruminated for awhile. On this day a third cow showed the same symptoms.

On the 22nd day of August, one of the cows showing signs of constipation was drenched with a dose of salts in solution. She immediately seemed worse and laid down, breathing heavily and grunted with each respiratory movement. She died on the 26th, and on postmortem examination showed lesions of pneumonia and bronchitis, together with inflammation of a part of the small intestines and a hemorrhagic spot the size of a dollar at the apex of the heart. The other two cows recovered.

These animals had been pasturing on a wheat stubble that was overgrown with Russian thistles, but the postmortem examination showed no thistles among the intestinal contents. In addition to the pasture, they were given oat hay night and morning.

As the summer has been dry and I suspect that recent showers may have caused some molds to develop in the pasture, I am sending some of the pasture grass and oat hay to be examined for molds.

I suspect that the fatal case died from deglutition pneumonia caused by the drench the owner administered, but as this conclusion does not account for the previous symptoms manifested, I would like to have the specimen examined for bipolar organisms and the feed samples for molds.—O. W. J., Washington.

REPLY:—The miscroscopic examination of blood showed typical bipolar organisms, but the examination of oats and grass sample showed nothing unusual. The cow therefore was undoubtedly affected with hemorrhagic septicemia, but as you suspected, the immediate cause of death was the mechanical pneumonia caused by filling up the bronchial tract with salts solution in administering the drench.

Drenching! What sins are committed in thy name. Until the veterinarian practicing among ruminants, convinces his clients that drenching is a dangerous practice for the novice, the troubles arising from this source will never cease.

False deglutition, while not always fatal, aggravates existing lesions, conceals the typical syndrome and transforms the simple ailment into a fatal disease.

THYROIDECTOMY IN LAMBS

I would like to know the technic of the operation of thyroidectomy in lambs. I notice an item in the Journal that it is performed in Italy.—P. L., Colorado.

REPLY: The operation of thyroidectomy in lambs is a unilateral operation. As you know, both thyroid glands cannot be removed without disastrous results.

This operation is very simple. An incision is made over the gland, through the skin and muscles, taking some little pains not to sever the jugular vein. When exposed, it is pressed out much as in castration and tied off with braided silk suture.

The only danger of the operation is that of cutting off the gland too near the ligature. It is advisable to leave a little of the gland tissue with the part outside of the ligature to prevent slipping. It is always well to clip and shave a considerable area in order to make a clear field.

Professor Freidrich reports that roentgen-ray castration in the human is followed by serious and lasting results.

Endameba histolytica have recently been identified in the necrotic areas of bone and marrow in cases of arthritis deformans of the human.

Matters of Current Interest

WEDDING BELLS

Dr. G. A. Roberts and Miss Ora Mast Glenn were married December 1, 1921, at Lavras Minas, Brazil, and will be at home in Sao Paulo, Brazil. Dr. and Mrs. Roberts had an extensive "honeymoon" trip to Uruguay and Argentina.

Dr. O. E. Troy, of Raton, N. Mex., and Miss Alvina Postel were married in Albuquerque, N. Mex., on the 3d of January, 1922. Dr. Troy is interested in general ranching at Raton, N. Mex.

Dr. Verne A. Scott and Miss Anna Pearle Kern were married at Bryan, Texas, on December 28, 1921. Dr. Scott is an instructor in the John Tarleton Agricultural College at Stephenville, Texas.

John R. Ludwigs, Lieut., U. S. A., and Miss Jean Alice McKenzie were married at Tacoma, Wash., on December 1, 1921. The Ludwigs are at home at Camp Lewis, Wash.

Wm. R. Wolfe, Lieut., U. S. A., and Miss Anita Marie McCormick were married at Little Rock, Ark., on December 31, 1921. They expect to be at home in Honolulu, H. T. Their address will be Headquarters, Hawaiian Department.

Dr. J. V. Ramler and Miss Verlie Martin of Anoka, Minn., were married on January 11, 1922. Dr. Ramler is in the employ of the State of Minnesota.

Dr. J. T. Wilson of Hampton, Va., and Miss Edessa Teater were married on February 23. Dr. Wilson is in general practice at the above address.

Dr. B. C. Parker of Kodiak, Alaska, and Miss Madge Woodward were married in Seattle, Wash., May 15. Dr. Parker is engaged in raising fox.

Dr. J. D. Wolf, formerly of Bronson, Kan., located at Osawatomie, Kan., on February 1, 1922.

Dr. S. Bennett, veterinarian of the Union Stock Yards, Chicago, was in Kansas City in February.

Dr. Tait Butler of Memphis, Tenn., was recently elected president of the Southern Cattlemen Association.

Dr. N. F. Williams of Fort Worth, Texas, resigned as sales manager of the Kansas Blackleg Company and expects to engage in some other professional service.

Dr. W. A. Cornell has recently accepted a position as salesman for the Lederle Antitoxin Laboratories, with headquarters at Amarillo, Tex. The doctor was associated with Dr. J. C. Flynn, small animal practitioner of Kansas City, Mo., since his discharge from the army about two years ago.

Dr. G. N. Russell recently located in Lawrence, Kan., where he is engaged in general practice. The doctor was employed by the State of Kansas in the tuberculosis eradication work for the last two years.

Dr. H. R. Thompson of Kansas City was recently called to McFarland, Kan., to investigate the loss of about 600 sheep in a shipment of 5,000 en route from New Mexico to Chicago. The loss was probably caused by exposure and hemorrhagic septicemia.

Dr. L. A. Tischhauser of Garnavillo, Iowa, believes that it is profitable to have his clients obtain general information on swine management and to further this cause he has called meetings in his community and the various phases of swine management were discussed.

Dr. L. G. Pottle, of Quincy, was elected president of the Adams County, Illinois, Veterinary Medical Association at the meeting held at Quincy, Illinois, February 23. Dr. J. W. Ireland, also of Quincy, was elected secretary.

Dr. Bruce Merrill of Mason City, Iowa, has moved to Van Hook, Iowa, where he will continue to practice.

Dr. Albert Buck, practicing at Urbana, Ohio, is the victim of an ugly lawsuit arising out of losses following the vaccination of a herd of hogs.

A small outbreak of glanders has broken out at Toluca, Illinois. Dr. H. E. Bears, assistant state veterinarian, is in charge.

A serious outbreak of hog cholera is reported to have broken out in the region of Grand Rapids, Wisconsin. The control work is in charge of Dr. V. P. Norton of that city and Dr. A. H. Legenhauser of the B. A. I.

Dr. R. A. Shafer has associated himself with Dr. Jas. B. McNamara of Upper Sandusky, Ohio, where he will take charge of the horse practice in order that the latter may henceforth devote his entire time to care of swine diseases.

Lieutenant Floyd M. Freidline, a graduate of the Indiana Veterinary College, an officer of the veterinary corps during the late war and a practitioner of Marion, Indiana, has organized a veterinary company of the National Guard of Indiana with headquarters at Marion. This is said to be the first company of the kind organized in the United States.

Hog cholera is said to be rampant in several counties of Arkansas according to reports of Dr. Peters of Little Rock, who in company with Dr. Glockner of the B. A. I., have instituted measures to stamp it out.

Dr. Clarence Baldwin, formerly of Wayland, Illinois, has moved to Ursa, that state. The doctor is a graduate of the Kansas City Veterinary College and was an officer in the veterinary corps during the World War.

Mrs. Annie E. Taylor, wife of Dr. C. C. Taylor, died at their home, 2627 Wells street, Milwaukee, Wisconsin, Monday, February 6, 1922.

The Jay and Randolph County Veterinary Association met at the office of Dr. Bayles, Pennville, Indiana, February 3, 1922. Drs. and Mesdames Kamel, Hinshaw, Redkey, York, Brooks and Gott were among those present. The next meeting will be held at Farmland, Ind.

Dr. J. T. Purcell, in charge of hog cholera work in Wisconsin, reports that the disease is much less prevalent than in 1921.

Dr. D. D. Tobias, of Wayne, Nebraska, has moved to Lincoln to take up the duties as a veterinarian in the state department of animal husbandry. Dr. Tobias has enjoyed a large practice and is one of the prominent veterinarians of Nebraska.

According to reports of State Veterinarian J. D. Adams of Idaho, an exceptionally virulent form of hemorrhage septicemia has broken out in several counties of that state, due to the low vitality induced by lack of feed and exposure during last winter.

Dr. R. L. VanSickle, a former member of the veterinary corps of the United States army, has opened an office at Aledo, Illinois. He is an alumnus of the Colorado State College and formerly practiced at La Junta, Colo.

Dr. G. H. Pierce, a specialist in the treatment of swine diseases, has moved from Washington Court House, Ohio, to Ashville, Ohio, where he will engage in practice on a more extensive scale.

Dr. Frank R. Reese of Woodland, California, addressed the Woodland Ad Club of that city on the subject of meat and vegetable inspection for public protection in January and aroused enough interest to bring about an investigation of existing conditions by the public authorities.

The special committee of the A. V. M. A. appointed by President Kinsley to study the question of reorganization of that association met at Charles City, Iowa, March 3, 1922. The personnel of the comimttee are J. H. McLeod, chairman; Charles E. Cotton, state veterinarian of Minnesota, and L. A. Merillat, editor of Veterinary Medicine.

Dr. Charles Bracke of Belleville, Illinois, sustained a serious accident when a horse upon which he was performing a dental operation tossed its head forward and struck him senseless with a blow on the nose. Nothing serious, it is said.

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Always use tepid water as cold water requires a longer time to dissolve it.

Vitamine B may be administered per orum as a drench by means of a stomach tube or injected directly into the rumen by means of a large trocar, canula and injection pump.

DOSAGE

Horses and cows, four ounces to eight ounces at a dose. Repeat it in two or three hours if necessary.

Calves, three ounces to six ounces at one dose.

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Dr. Henry S. Lewis died at his home in Chelsea, Mass., January 4, 1922, of pneumonia.

At the annual meeting of the Indiana Veterinary Medical Association, January 10-13, 1922, the attendance was 563 members and visitors—the largest attendance at a state association on record.

Dr. Edward M. Lang has sold his stock farm in Wisconsin and will open up the finest dog and cat hospital in the United States, so he says, in Louisville, Kentucky, this spring.

The mid-winter meeting of the Kentucky Veterinary Medical Association was held at Owensboro February 8-9. Dr. Robert F. Fisher of Paducah is president and Charles W. Fisher of Danville is secretary.

The Oklahoma Semi-Annual

The semi-annual meeting of the Oklahoma State Veterinary Medical Association was held in Oklahoma City, January 4th and 5th, 1922. "Opportunities of Veterinarians in Poultry Practice in Oklahoma," by Dr. C. L. Nelson. "Production of Certified Milk," by Dr. C. H. McElroy. "Normal Temperature of Animals," by Dr. L. L. Lewis. "Report on the National Progress of Tuberculosis Eradication," by Dr. Elmer Lash. "Diseases of Hogs in Oklahoma," by Dr. C. H. Fauks.

Dr. H. Jensen conducted a very spirited round table talk and Dr. A. T. Kinsley led a very spirited and instructive discussion on the diseases of hogs. On the evening of January 4th a very enjoyable banquet was attended by all veterinarians, wives and friends, at which time a discussion of a proposed veterinary college to be established at the A. & M. College of Oklahoma was held. The meeting was attended by about fifty veterinarians and several visitors in adjoining states.—**T. O. Booth, Secretary.**

At the annual meeting of the Maine Veterinary Medical Association, January 11, 1922, Dr. C. F. Davis was elected president and Dr. P. R. Laird, secretary-treasurer. A large attendance is reported. Dr. A. L. Murch presented a paper on sterility and Dr. M. E. Maddocks one on "Drugs from the Financial Standpoint." An anesthetic committee was appointed to draft an anesthetic law. Resolutions were passed on the death of Dr. W. L. West, whose sudden death was a shock to his colleagues.

Dr. W. K. Strouder of the veterinary extension department of Ames, lectured to the farmers of Buena Vista County on January 23rd and 24th, on common diseases of swine, and sanitary measures for their control.

Dr. H. R. Schwarze of East St. Louis, Ill., addressed the meeting of the South Dakota Veterinary Medical Association, January 16, on the subject of botulism.

According to the report of the retiring state veterinarian, D. F. Luckey, of Missouri, that state ranks third in the total number of cattle tested last year. The total number tested was approximately 118,000.

Dr. J. A. Kiernan, of the Bureau of Animal Industry addressed the meeting of the Minnesota State Veterinary Medical Association at its recent annual meeting, January 12 and 13, on the "Eradication of Tuberculosis and the Progress of the Movement in the State of Minnesota."

Prof. W. L. Boyd, of the University of Minnesota, was elected president of the veterinary association of that state at its twenty-fifth annual meeting, recently held at St. Paul. A. J. O'Hara of Northfield was elected first vice-president, B. L. Cook of Farmington second vice-president, and C. P. Fitch secretary-treasurer. The meeting was one of the most successful in the history of the association. There were 225 veterinarians in attendance.

Dr. W. E. Bates, a member of the Illinois State Veterinary Medical Association, practicing at Odell, was shot and seriously wounded by Bernard Tollensdorf, a neighbor, Tuesday, January 10th. The attack is alleged to be unprovoked, according to press reports. Tollensdorf was arrested by the sheriff and taken to Pontiac.

The state board of veterinary examiners of Iowa are Peter Malcolm, S. H. Johnson and E. E. Sayers. They recently held a two-day examination at which there were twelve candidates for licenses to practice in that state.

Dr. Felix Ezzel, an assistant to the state veterinarian of Missouri, is at Bloomfield, Mo., for further activities in tuberculosis eradication.

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Animals in as Serious a Condition as Shown Here Have Responded Quickly to VITAMINERAL Treatment

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BIOLOGICS

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It has been said that acid rations fed to swine or calves occasion a rise in urinary ammonia with a fall in output of urea.

There are more than 3,500,000 goats in the United States.

Buttermilk with added cream is being recommended as a splendid food for abnormal children.

There were 819,117 pure-bred Duroc Jersey swine in the United States on January 1st, 1920.

Goat fanciers report that the usual cause of abortion in these animals is due to insufficient food.

By a series of experiments, McCandlish and Olson have demonstrated that drug administration to cows can not be relied upon to influence the yield of milk or butterfat.

Stafseth reports the intradermal abortion test reliable and specific for Bact. abortion infection in guinea pigs, and suggests that it may be useful in detecting this infection in cattle.

Results obtained by Beach and Hastings indicate the possibility of eliminating Johne's disease from infected herds by the use of Johnin as a diagnostic agent.

It has been demonstrated by Regan and Mead that the percentage of butterfat in milk may be increased from ¼ to ½% for two days by leaving half of the milk in the udder during the milking prior to the test period.

Rachitic lesions which develop regularly in rats upon a diet adequate in calcium but low in phosphorus may be prevented by short exposure to direct sunlight, according to Hess, Unger and Pappenheimer.

Dr. A. S. Cassin, 30 years old, of Kingsley, Ia., was instantly killed when his driving horse kicked him in the temple February 15, 1922. The doctor had just returned home from making a call and was returning his horse to the stable when the accident occurred. He is survived by a widow and a two-year-old son.

McCollum states that the palatability of a ration is most significant in animal nutrition. Without palatability, the rations may possess all the food ingredients and yet fail to nourish an animal properly.

According to Hart, Steenbock, and Fuller, the addition of calcium carbonate or calcium phosphate into grain ration increases the retention of both calcium and phosphorus by growing pigs and results in formation of a heavier skeleton.

In Research Bulletin No. 33, of the Wisconsin Experiment Station, is found the statement that alfalfa hay has specific diuretic properties and its ingestion was generally followed by marked rise in the output of urine. This rise in renal activities causes a depression in the milk flow, in some cases amounting to 5 or 6 lbs. on a flow of 25 lbs.

In Circular No. 40 of the Michigan Station, it is stated that recent research on abortion disease indicates that the bull is not as important a factor in transmitting abortion as was formerly believed, and that abortion may be very largely prevented by removing non-infected pregnant females from sources of infection.

Dr. Cliff Ackley, state veterinary inspector in charge of tuberculosis work in a district in Washington, reports the percentage of reactors is remarkably low. In one report of 1,354 cows tested less than one per cent reacted.

The Schuylkill Valley Veterinary Medical Association will hold its next meeting April 19, at Pottsville, Pa. This meeting will be the twenty-eighth anniversary of the association, which was organized April 19, 1894, at Pottsville. The Schuylkill veterinary association is the oldest veterinary association in Pennsylvania.

Dr. Peter Malcolm, state veterinarian of Iowa, announces that bovine tuberculosis is being slowly but surely wiped out of that state. There are 2,177 herds in the state that have passed the first test, 377 accredited herds, and 11,000 accredited animals already on the list.

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ASSOCIATION MEETINGS

ASSOCIATION	PLACE	DATE	SECRETARY
Alabama Vet. Med. Assn...	Auburn, Ala.....	March, 1922.....	C. A. Cary, Auburn, Ala.
American Vet. Med. Assn..	St. Louis, Mo....	.....	N. S. Mayo, Ravenswood, Chicago.
California State V. M. A...	Davis, Cal.....	Jan. 1-7, 1922.....	Jos. M. Arburma, Hanford, Calif.
Chicago Vet. Soc.....	Chicago	2nd Tuesday of each month	J. B. Jaffray, Chicago, Ill.
Conestoga Vet. Club.....	Lancaster, Pa.....	2nd Thursday each month..	H. B. Brady.
Illinois S. V. M. Assn.....	E. St. Louis.....	August, 1922	D. M. Campbell, Chicago, Ill.
Kentucky Vet. Med. Assn..	Owensboro, Ky....	Feb. 8-9, 1922.....	Chas. W. Fisher, Danville, Ky.
Massachusetts V. A.....	Boston, Mass....	4th Wednesday of month..	H. W. Pierce, West Medford, Mass.
Missouri Valley Vet. Assn..	Omaha, Nebr.....	July, 1922.....	R. F. Bourne, Ft. Collins, Colo.
Montana Vet. Med. Assn...	Billings	July, 1922.....	H. Marsh, Helena.
Natl. Assn. of B. A. I.....	Meet with A.V.M.A	Sept. 5-9, 1922.....	S. J. Walkley, Milwaukee, Wis.
Nebraska Vet. Med. Assn..	Lincoln	Dec. 5, 6, 1922.....	C. J. Norden, Lincoln.
Nevada Vet. Med. Assn.....	Reno, Nev.	.....	Stephen Lockett
New York S. V. M. Soc...	Syracuse	1922	C. E. Hayden, Ithaca, N. Y.
North Carolina S. V. M. A.	Asheville	June, 1922.....	J. P. Spoon, Burlington, N. C.
North Dakota V. M. Assn..	Fargo	July, 1922.....	R. S. Amadon, Agri. Coll., N. Dak.
Northern Tier Vet. Club..	Williamsport, Pa..	Feb. 9, 1922.....	E. B. Mayer, Canton, Pa.
Philadelphia Vet. Club.....	Philadelphia	4th Tuesday of month....	C. S. Rockwell, 5128 Chestnut, Phila.
San Joaquin Valley V. M. A.	Davis, Calif.....	January 1-7, 1922	H. B. Winteringham, Fresno, Calif.
South Dakota V. M. Assn...	Sioux Falls.....	January, 1922	W. J. Joseph, Iroquois, S. D.
Southern Cal. V. M. Assn..	Los Angeles	3rd Wednesday of month...	J. P. Bushong, Los Angeles.
Southeastern States V. M. A	Nashville, Tenn...	March 13, 14, 1922	J. I. Handley, Atlanta, Ga.
Southeastern Mich. V. M. A.	Detroit, Mich.....	2nd Wednesday, January, April, July October	H. P. Hoskins, Box 471, Detroit, Mich.
Utah S. V. M. Assn.....	Salt Lake City	October, each year.....	E. A. Bundy, Ogden.
V. M. Assn. of N. Y. City..	338 E. 26th St....	1st Wednesday of month..	J. E. Crawford, Far Rockaway.
Wash. State Col. V. M. A.	Wash. State Coll..	2nd & 4th Tuesday of month	S. Worley, College Sta.
Western Pa. Vet. Club....	Pittsburgh	3rd Tuesday of month.....	Fred Weitzel, Pittsburgh.
Wisconsin V. M. Assn.....	Marinette, Wis....	July, 1922.....	O. H. Eliason, Madison.
York Co. V. M. Soc.....	York, Pa.....	1st Tuesday March, June..	E. S. Bausticker, York, Pa.

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"Back to nature" is the retrogressive step forced upon breeders by the difficulties attending adaptation.

According to Dr. J. A. Kiernan, chief of the Tuberculosis Eradication Division of the Bureau of Animal Industry, enough meat was lost from tuberculosis to feed more than 36,000 American families.

The annual meeting of the Central Wisconsin Graduate Veterinarians' Association will be held at Marshfield, March 7, 1922.

Terrestrial animals use the pelvic limbs to move them along and the pectoral ones to supply the balance. In aquatic animals the pectoral appendage, the vertebrae and the caudal appendix are the organs of locomotion, while the pelvic accessories supply equilibrium.

Weaver of the Missouri Experiment Station, concluded after analyzing the results of a feeding experiment that 1.5 pounds of semi-solid buttermilk may be used to replace a pound of tankage without substantial influence on the rate of economy or gain.

Atwood and Lueder found the recently hatched gape worm to be extremely susceptible to the action of dilute creolin or phenol. They report that 3 drops of creolin in a pint of water killed the newly hatched worm within one minute. This suggests a very effective remedy to control gapes in fowls.

A tabulated report of 5,664 cows tested by testing associations during November, 1921, shows that only 696 of them produced more than 40 pounds of butter fat. Only 12% of these cows yielded an income of more than $18.00 per month. The sterility problem, that is, the problem of increasing reproduction, is one thing, and that of increasing production is another. Both are questions the veterinarian is in the position to work out.

Going Some

Dr. Vird O. Cudd of Monmouth, Illinois, makes his calls by aeroplane these days of mud ridden roads. He recently went from Monmouth to Wapello and return, a trip that would require a whole day by train, in exactly 35 minutes, including the time required to adminster the professional service.

Looking Backward

The first mule brought to America was sent by the King of Spain as a present to George Washington. Its name was Royal Gift.

Galen (130-200, A. D.), whose definition for inflammation stood test of 19 centuries, wrote more than 500 works during his life time.

Twenty-one years ago Koch, the discoverer of the bacillus of tuberculosis (1882), announced that there was such a difference between bovine and human tuberculosis that it was not essential to take steps to prevent its transmission from the bovine species to human beings.

In 1884 Kansas was all "het up" about a supposed outbreak of foot and mouth disease and brought all available veterinarians of high standing to the rescue. Among those who wrote elaborate reports about the outbreak are: Law, Salmon, Trumbower and Holcombe (U. S. A.); Faville and Hopkins. They found the trouble to be ergotism.

"Drs. I. E. Newsom and H. E. Kingman, who have been doing special work at the Kansas City Veterinary College, have returned to the Veterinary Department of the Colorado Agricultural College to take up teaching during the spring term. Dr. Newsom is professor of anatomy and Dr. Kingman professor of materia medica."—Mo. Val. Vet. Bul., April, 1909.

The first three issues of volume three (1889) of the American Veterinary Review contains 80 closely printed pages on the etiology of tuberculosis, by Robert Koch.

Rome, according to fiction, was founded by twins rescued, suckled and raised by a she-bear. Kipling wrote his jungle books around such characters. A British scientist refers to nine children rescued from such foster parents and states that none of them ever regained the normal human mentality. That physiological processes weigh down instead of push upward in the evolutionary trend is shown by contrasting this circumstance with the fact that dogs raised by human beings retain canine characteristics, and ducks, turkeys, guineas and geese raised by chickens never lose their respective habits.

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RADER & RADER, Oxford, Iowa

Thyroidectomy in cattle does not produce thyroid insufficiency, according to Hug who removed both thyroid glands of young bull calves and carefully observed them for some time thereafter.

The Veterinarians employed by the Board of Agriculture of Missouri and the field veterinarians of the B. A. I., in the state of Missouri held a two days conference early in March to discuss the future plans for Tuberculosis control.

According to the 1920 census there were 52,617 blind people in the United States. There was, therefore, one blind person to every 2,000 population. The percentage of blindness has been noticeably reduced in the last ten years, which may be attributed to improvement in medical knowledge and education.

Dr. C. E. Inskey of Urbana, Ohio, was elected president of the Northwestern Ohio Veterinary Medical Association at the annual meeting of that association at Toledo, Ohio, February 23, 1922. Dr. H. Fulstow, of Norwalk, was re-elected secretary-treasurer.

Dean White of the veterinary department of the Ohio State University addressed the Logan Elm Grange at Circleville, Ohio, February 23, on the "Diseases of Farm Animals."

Captain W. F. L. Bright, a veterinary officer of the British army who served in the R. A. V. C. in France during the World War from 1915 to 1919, was killed by raiders November 22, 1921, at Zhob, India, as a consequence of the unsettled state of affairs in that country. —Vet. Jour.

English Colleagues Honored

Secretary Smith reports that the following Fellows of the Royal College of Veterinary Surgeons have been elected as members of the Royal Institute of Public Health: Patrick J. Austin, Ralph Bennett, Robert Bryden, Joseph H. Carter, William Caudwell, Robert C. Cochrane, Frederick W. Emery, Richard Finch, Hedley G. D. Golledge, John J. Griffith, William Hepburn, George Howe, Charles J. Humphrey, Walter Jowett, William A. King, William L. Little, John H. Wynne.

MICHIGAN VETERINARY MEDICAL ASSOCIATION

"We Represent the Protectors of a Ten Billion Dollar Industry," was the wording of a banner prominently displayed in the Surgery and Clinic Building at the Michigan Agricultural College when the Michigan State Veterinary Medical Association held its 40th annual meeting there on February 7 and 8. The attendance was beyond expectation. One hundred and ten veterinarians registered and 30 ladies attended the sessions for women. Practically every one present attended the dinner and dance on the evening of the first day.

The papers and discussions manifested the trend of affairs in the profession in this state. They indicated that the profession is changing with the times. Much was said about tuberculosis eradication, diseases of dairy cattle, municipal meat inspection, public health work, poultry diseases and very little about subjects that were commonly discussed a few years ago.

The social event of the meeting, which was so popular a year ago, was repeated this year and was received with even more enthusiasm than last year. A banquet fit for a king, with music by a college orchestra and entertainment by the college yell-master who is a veritable comedian, followed by dancing, cards, smokes and real heart-to-heart visits with old friends, occupied the whole evening.

The ladies enjoyed a theater party, the dinner-dance, a lecture on nutrition in the Home Economics department of the college, a visit to the Girls' Practice House, an exhibition of swimming by co-eds in the gymnasium-pool, and a luncheon where men were entirely excluded.

Clinic consisted of a radical operation for fistulous withers, one for laryngo-hemiplegia, and a demonstration of a treatment for sterility in a cow.

The Association went on record as endorsing the Sterling-Lehlbach bill for the reclassification of civil employes. It was voted to hold a summer meeting at the college in conjunction with the Veterinary Department of the college, the State Bureau of Animal Industry and the local branch of the Federal Bureau of Animal Industry.

The following officers were elected for the year:

President, Dr. J. E. Wurm, Practitioner, Pigeon; 1st vice president, Dr. B. J. Killham, Chief Veterinarian, State Dept. of Agriculture, Lansing; 2nd vice president, Dr. H. Preston Hoskins, Parke, Davis & Co., Detroit; 3rd vice president, Dr. G. W. Cronkite, Practitioner, Saginaw; secretary-treasurer, Dr. R. A. Runnells, Dept. of Animal Pathology, Mich. Agricultural College; director for 6 years, Dr. W. N. Armstrong, Practitioner, Concord.

—R. A. Runnells, Secy.

The regular monthly meeting of the Weld County Veterinary Medical Association met at Johnstown, Colo., Feb. 23. A good attendance was present considering the severe cold. A general discussion of animal disease and important matter relatively the profession.

The following officers were elected for the ensuing six months: Dr. A. G. Fisk, Greeley, Colo., President; Dr. George Cooper, Keensburg, Colo, 1st Vice President; Dr. N. J. Miller, Eaton, Colo., 2nd Vice President, and Dr. W. G. Blake, Johnstown, Colo., was re-elected Secretary-Treasurer.—**W. G. Blake, Secretary-Treasurer.**

Dr. Homer Wilson who was appointed state veterinarian of Missouri to fill the vacancy caused by the resignation of Dr. D. F. Luckey, was an officer of the veterinary corps, A.E.F., ranking as first lieutenant.

Dr. J. H. Nichols of Paris, Illinois, indicted last October for the death of Miss Ethyl Crume of Mattoon, Illinois, surrendered to the sheriff of Coles county, where he hopes to be released on bail awaiting trial. Dr. Nichols who is a man of high standing in Paris, belonging both to the Elks and Masons, characterizes the charges against him as a "frame up."

Dr. L. V. Puckett of Arthur, Illinois, has moved to Mt. Vernon, Illinois, where he will engage in the mercantile business with his father.

Dr. N. E. Peigh of Medaryville, Indiana, has moved to Knox, Indiana, where he has opened an office to continue general practice. Dr. Peigh is a graduate of the Chicago Veterinary College.

The non-graduate veterinarians of Kentucky have a state association of their own, that holds regular stated meetings. The annual meeting of 1922 will meet at Dawson Springs, April 4 and 5. Burie E. Parker of Boaz is the secretary and C. A. Washburn of Mayfield is the president.

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Maryland's Semi-Annual

The Maryland State Veterinary Medical Association held its regular semi-annual meeting at the Medical Hall, 1211 Cathedral Street, Baltimore, Md., January 19, 1922. President Dr. R. V. Smith, of Frederick, was in the chair. Twenty members responded to roll call.

The meeting was then addressed by Dr. J. F. De Vine, of Goshen, N. Y., on abortion in cattle and its treatment. Dr. De Vine reviewed the most recent literature on the subject, outlined his preferred manipulations and treatment and cited many cases to illustrate his convictions. After an open session on the subject, led by Dr. Reed, of the University of Maryland, during which Dr. De Vine went into greater detail concerning many features of the disease, a rising vote of thanks was given the speaker for his courtesy and instructive address.

The annual election of officers resulted as follows: President, Dr. R. V. Smith, of Frederick; vice-president, Dr. C. M. Grubb, of Rockville; secretary, Dr. H. Young, of Baltimore. Meeting adjourned at 4:30.—Herbert Young, Sec'y.

The Central Michigan Society

Central Michigan Veterinary Medical Society held its annual meeting Friday afternoon, January 6, 1922, at the Otsego Hotel, with a very large attendance.

In the absence of the president, Dr. H. F. Roberts, Dr. W. N. Armstrong, secretary-treasurer of the society, called upon Dr. B. F. Killham, chief veterinarian of the state of Michigan, to act as chairman, who, after a few well chosen remarks, called upon Dr. T. S. Rich, who is head of the department of eradication of tuberculosis in Michigan, to explain the proposed tuberculin test, which is to be started in Jackson County. Dr. Rich stated there would be at least fifteen federal and state veterinarians to complete these tests.

Roy Decker, Jackson county agricultural agent gave a talk on the relation of the agricultural agent to the veterinarian, which was well received.

Dr. A. B. Curtis, of Hillsdale, presented an interesting review of the result of the tuberculin test in Hillsdale County, in which he stated that cattle could not be shipped into the county without the tuberculin test made by approved veterinarians.

Dr. C. C. Mix, of Battle Creek, gave a splendid talk on the intradermal tuberculin test and its technique.

Dr. John Hutton, of the Michigan Agricultural College at Lansing, during his talk told of the situation of the live stock in relation to veterinary medicine. Statistics show that in 1921 the number of live stock in the United States was 203,355,000 and the valuation $6,235,469,000, milch cows having increased in number 2,498,000 at a valuation of $558,000,000. The number of horses in the United States in 1911 was 20,277,000, and in 1920, 20,184,000. Michigan, as compared to this, had 602,410 horses at the time of the April census in 1910, and 605,509 January, 1920. Dr. Hutton stated that the draft horse was much more economical than the automobile for short hauls.

Dr. H. F. Palmer, of Goshen, N. Y., spoke on veterinary practice in New York state.

Dr. H. M. Newton, of the bureau of animal industry at Lansing, had for the subject of his talk, hemorrhagic septicaemia and neuratic enteritis in hogs, stating that hog cholera, though quite prevalent in the state, is not alarming at this time.

Dr. A. McKercher of Lansing had for his subject the opportunities of the present day veterinarian which brought out much discussion.

The result of the election of officers for the year was Dr. E. F. Meyer of Jackson was elected President, Dr. Fred Mains of Albion, Vice-President, and Dr. W. N. Armstrong reelected Secretary-Treasurer.

A program committee was appointed, consisting of Dr. A. Campbell of Jackson, Dr. John Scott of Jackson, Dr. F. Richmond of Springport.

A dinner was served at the Otsego Hotel following the meeting, after which several good talks and smokes were enjoyed by the members.

A vote of thanks was given manager Magmer of the hotel for the splendid manner in which the dinner was served.—W. N. Armstrong, Secretary-Treasurer.

The Chicago Veterinary Society, one of the oldest municipal associations of veterinarians in the country, has been in continuous operation since 1896 and has held monthly meetings without material interruption since that date. The present officers are: L. A. Merillat, president; T. B. Crowe, first vice president; T. A. Newell, second vice president; and John B. Jaffray, secretary-treasurer.

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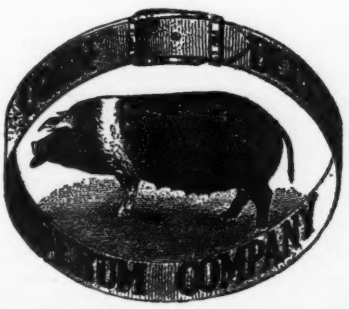

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KANSAS PRACTICE FOR SALE—Price, $450.00. Get full particulars. No other graduate veterinarian here. May have just what you want. Address 2962, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

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SEVERAL third year students at the Ont. Vet. College, are looking for perceptors for the summer with intentions of buying practice after graduations. May 1st to October 1st. Address, F. A. Clarke, 110 University Ave., Toronto, Ont.

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FIFTEENTH ALABAMA ANNUAL

The fifteenth annual meeting of the Alabama Veterinary Medical Association was called to order at 2 p. m., February 23, 1922, by President L. E. Beckham, in the College of Veterinary Medicine, at the Alabama Polytechnic Institution.

Surgery

Following the President's address and the report of the Secretary-Treasurer, L. L. Denson read a paper on the amputation of the supernumary teats in cows. He described the cautery method and the Flap Method. E. T. Davis next described the method of draining the sinuses of the head in cattle. Each sinus was described individually and the proper method of drainage by the trephine, etc., was brought out. A. A. Miller then described the parasites and gave the life history of the parasites that are found in the sinuses of sheep and goats.

Parasites

J. L. Miller read a paper on "The Dog as a Primary Host of Parasites." He confined his paper largely to worms found in the alimentary canal. E. Everitt next described the principal round and flat worms found in the digestive tract, and the round worms found in the trachea of chickens. He gave definite methods of diagnosis and treatment and related his experience with various drugs, such as oil of chenopodium.

Hog Cholera

Dr. H. C. Wilson, Federal Veterinarian on hog cholera work in Alabama, described his method of injecting serum directly into the peritoneal cavity. He told how he controlled "breaks" and quoted Dr. Niles, who stated that 90% of hog diseases was cholera.

H. S. Stewart gave a paper on the life history of the Ascaris lumbricoides of pigs.

Anthrax

The morning of February 24, Dr. R. S. Sugg read a paper on "Anthrax Problems." He told how smears of blood made on glass and smooth paper, and dried in the sun, and sometimes in the shade, soon lost viability, explaining that the mature germs die before they form spores. He advised that blood from anthrax carcasses be collected early after death with small pieces of gauze rolled up and used like blotting paper. This should be allowed to dry slowly and then put into a container—not air tight—plugged with cotton; then put in a secure mailing box and ship to the laboratory.

He also stated that it was impossible to

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make an accurate diagnosis with smears alone. It is necessary to make cultural and inoculating tests in order to be positive.

Dr. D. J. Meador discussed this paper and told how he had controlled an extensive outbreak of anthrax on an open range by burning carcasses very promptly after the death of the animals. This prevented flies and dogs and buzzards from distributing the infection and also destroyed infection. He also stated how the Alabama state authorities prohibit the indiscriminate use of anthrax vaccine. In no case is it permissable to use it until a positive diagnosis has been made by a state or federal authority.

Chemical Poisons

Dr. E. R. Miller, Chemist, gave a short talk on some peculiar cases of chemical poisons. Arsenate of lead was suspected, but neither lead nor arsenate could be found in tissues, intestines or stomach; but sulphur and lime were found in abundance, and he attributes the toxic effect to hydrogen sulphide and sulphite and calcium sulphide or sulphite.

Major I. Spalding of the U. S. Army next gave a short talk on feeding horses and mules in the army.

Botulism

Dr. N. G. Coving read a paper on botulism in man and animals. He gave the history of botulism and reported records of outbreaks in man and discussed the disease in general in animals. The important point he brought out was that the toxin of botulism was not developed in animals but in the foods before the toxin was taken into the animals.

Thumps

"Why do Hogs Thump?" was discussed by Dr. W. D. Staples. He said this is a symptom which was in reality a spasmodic contraction of the diaphragm, due to a toxic or some other irritant of the nerves and muscles of the diaphragm. He said also, that it was often a symptom found in pneumonia, indigestion and lung parasites.

Miscellaneous

The intradermal tuberculin test was discussed in full by Dr. C. P. Gaston; the Ophthalmic test by Dr. T. M. Dennis and the combination test by Dr. C. J. Becker. Dr. I. S. McAdory then read a paper on the location of the lymph glands in cattle and in hogs. This was followed by a discussion on the lymph glands that are most frequently involved in tuberculosis in hogs and in cattle.

A special committee composed of W. D. Staples, D. J. Meador, W. B. Fleming, reported on the method of the Veterinary Supply Co., of Kansas City. This report was adopted by a unanimous vote of the Association. The resolution or report read as follows:

"Whereas, it has come to the attention of the Alabama Veterinary Medical Association that the American Veterinary Supply Company whose officers are: Dr. A. Trikett, Dr. G. F. Jungerman, Dr. R. E. Naylor, and who are members of the American Veterinary Medical Association, are advertising by circular letter and catalogue that for the past twelve years they have sold to veterinarians only, but have changed their policy and in the future will sell to laymen direct; Therefore, Be It Resolved, That, we, the members of the Alabama Veterinary Medical Association, do heartily condemn and disapprove of such methods.

"Resolved that a copy of this resolution be spread upon the minutes of this Association and that a copy be sent to the secretary of the American Veterinary Medical Association for publication in the Journal."

The officers elected are: D. J. Meador, Selma, President; R. S. Sugg, Auburn, Vice-President, and C. A. Cary, Auburn, Secretary-Treasurer.

On the night of February 24, the veterinary student's association of the Alabama Polytechnic Institution gave a banquet to the members and visitors, with the aid of the Local Order of the Eastern Star. It was a most delightful and entertaining evening.

On the morning of February 25, the B. A. I. and the state authorities gave an examination to graduate veterinarians who wished to be granted permission to test accredited herds.

On the same day a poly-clinic was held at the A. P. I. College of Veterinary Medicine.

A number of cases were examined and diagnoses made. A grade Holstein heifer that had given tuberculin reaction was killed at the serum plant slaughter house and an autopsy was held for the benefit of the students and the veterinarians. It proved to be a case of generalized tuberculosis in which a large number of body and visceral glands were infected with slight infection of the lungs, no apparent infection in the kidneys and a very distinct lesion extending from the iris out through the cornea of the right eye. This heifer was only two years old and came from a tuberculous herd.—**C. A. Cary, Secretary.**

NEW YORK CITY VETERINARY MEDICAL ASSOCIATION

February 1, 1922.

Dr. Charles H. Higgins read an interesting paper on specific therapy, reviewing some of the achievements of the veterinary profession in diagnostic and preventive measures in the control of animal diseases. His discussion was confined to the measures in force in Canada and particularly to those appertaining to the control of glanders.

Speaking of tuberculosis organisms he stated they are the same wherever found, the virulence depending upon the temperature of the host as examplified in the variation found between those in birds and those of the cold-blooded animal.

Three Interesting Cases Reported by Dr. Bruce Blair

Case No. 1. A four-month old Boston terrier had been growing fat for about two weeks, lost its appetite. It was diagnosed as ascites, and two quarts of fluid removed. The dog died on the following day. The postmortem examination showed the causative lesion was in the heart, although pathological changes were found in several of the abdominal organs.

Case No. 2. Aberdeen terrier, bred by accident to a collie. The physical examination showed a hemorrhagic, fetid discharge from the uterus. Operated upon, the uterus was found non-gravid but to contain more than a pint of pus. Hysterectomy was successful and the recovery slow but complete.

Case No. 3. Five year old mongrel apparently suffering from jaundice. It was given an enema, and a quarter of a grain of arecoline per os once daily for three days. There was improvement on the second day and complete recovery on the eighth day.

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having in the treatment of tape worms in dogs from the use of arecoline. One eighth to one quarter grains of arecoline are given per os on an empty stomach. The worm is passed in about 24 hours.

He also spoke about the importance of an early diagnosis in cases of pyometra and the danger of mistaking it for pregnancy. The uterus, filled with pus, feels about the same on palpation as the pregnant uterus. The temperature may sometimes serve to distinguish one from the other.

An Endothelial Carcinoma Exhibited by Dr. Slawson

After speaking of the importance of performing hysterectomy before pyometra is too far advanced, Dr. Slawson exhibited the liver and spleen of a dog that was destroyed on account of an incurable internal tumor, which proved on microscopic examination to be a rare specimen—a multiple endothelial carcinoma. "This tumor occurs frequently in man but it has never been reported in dogs," said Dr. Slawson. The dog had emaciated rapidly. The diagnosis of tumor was made antemortem by palpation.

The Question Box

The question box brought out a discussion on nephritis in dogs. Dr. Gannet has found the disease very prevalent. Dr. Reid Blair referred to its frequent occurrence in old house dogs, and recommended sanmetto in teaspoonful doses three times a day as the best treatment.

Dr. Cassius Way presented a report on the veterinary conference at Ithaca.—**J. F. DeVine.**

Dr. J. E. Wurm, of Pigeon, was elected president of the Michigan State Veterinary Medical Association at the 40th annual meeting of that association held at Lansing during February. Dr. H. Preston Hoskins of Detroit was elected second vice president, state veterinarian, B. J. Killham, first vice president, Dr. R. A. Reynolds of the agricultural veterinary department of the college, secretary-treasurer, and Dr. M. W. Armstrong of Concord, member of the executive committee.

The romance of and thrills of farming and country life and the bright side even of disease and adversity was the theme of an address delivered by State Veterinarian W. H. Lytle of Oregon Farmers' week at Bend, Oregon, during February.

A special conference of inspectors in charge of hog cholera control work was held at the Federal building in Kansas City, Kans., on February 2nd. The states of Nebraska, Kansas, Oklahoma, Missouri, Iowa and other states were represented.

On Jan. 1, 1920, there were 463,504 pure-bred sheep in the United States. This was only 1.3% of the 35,033,516 or total number of sheep. The largest percentage of pure-bred sheep is in the New England States.

First Lieutenant A. D. Martin, V. C., has been transferred from the quartermaster intermediary depot at Boston to Fort Niagaria N. Y., for duty as station veterinarian.

For quickly sterilizing a hypodermic syringe and needle, fill syringe with chloroform, let remain a few moments and expel. Chloroform will also remove the stains of cannabis indica from graduates, bottles, syringes, etc.—Reed.

Balsam of Peru is a much neglected agent in the treatment of wounded surfaces, especially those attended by suppuration and consequently slow granulation. It should be applied freely to the wound until every crevice is filled. Its high cost is more than offset by the results obtained.—Reed.

A four drachm dose of potassium iodid repeated each four to six hours, will render real service in the treatment of azoturia. If delirium is present, alternate with gelsemium.—Reed.

Hexamethylenamin in two drachm doses three times daily is of value in the prevention of infectious cerebro-spinal meningitis of horses. The drug can be given in the drinking water.—Reed.

There is no drug more valuable in sloughing of tissue, "local gangrene," etc., than rectified oil of turpentine. It is equally useful for furuncles, phagedenic ulcers, and foul smelling wounds in general. Remove the dead tissues and apply by means of a small brush direct to the affected parts.—Reed.

THE MANITOBA ANNUAL

The annual meeting of the Veterinary Association of Manitoba was held in Winnipeg on February 7 and 8. The first day of the meeting was held at the Royal Alexandra Hotel, Winnipeg, about fifty members of the association being present.

Addresses were delivered by Dr. Geo. Hilton, Chief Veterinary Inspector, Health of Animals Branch, Ottawa on tuberculosis. Dr. W. A. Shoults of the provincial health department, Winnipeg on the control of animal food products in the interest of public health. Dr. J. Rowe Fisher, Brandon on the use of the stomach pump. Dr. H. N. Thompson, Virden, on goitre affecting live stock. Dr. N. V. James, Gladstone, on surgical cases encountered in country practice.

On February 8, 1922, the second day of the meeting, a demonstration of the newer methods of tuberculin testing and postmortem examination of reacting animals was conducted at the stock yards and abattoir of Gordon Ironside & Fares Packers, by inspectors of the contagious diseases and meat inspection divisions of the Health of Animals Branch.

The following officers were elected for the ensuing year: President, Dr. H. R. McEwen, Stonewall; vice-president, Dr. J. R. Fisher, Brandon; secretary-treasurer, Dr. J. B. Still, Winnipeg.

FOURTEENTH ANNUAL CONFERENCE FOR VETERINARIANS, NEW YORK STATE VETERINARY COLLEGE

An outbreak of hemorrhagic septicemia in a flock of 1,400 killed two-thirds of them at Stone Bluff, Indiana, during last November. was convened at Ithaca for the fourteenth consecutive convention with a program covering a large list of subjects presented by men foremost in the rank of the veterinary profession and animal husbandry.

Among the subjects discussed were: B. Botulinus and Botulism, by V. A. Moore; Surgical Diseases of the Udder, by Frost and Varley; Anesthesia, by H. M. Milks; Interpretation of Nervous Symptoms in Domestic Animals, by D. H. Udall; Control of Abortion Disease, by W. L. Williams; Lung Worms in Domestic Animals, by B. H Ransom; Tuberculosis Control, by Bruner, Leonard, Pyrke, Frink and Babcock.

An informal dinner at the Ithaca Hotel was featured by post-prandial addresses by Dean White of the Ohio State University, and W. G. Hollingsworth of Utica.

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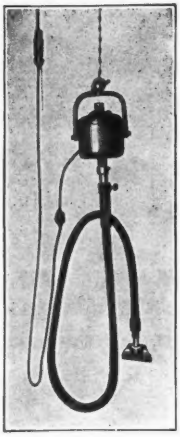

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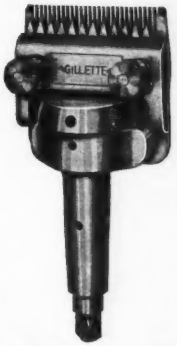

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PEORIA, ILLINOIS

A portrait of Professor W. L. Williams was presented to the University by the Veterinary College Alumni Association, with appropriate ceremonies, J. L. Wilder making the presentation speech.

Dr. M. E. Elzinga was re-elected president of the Western Michigan Veterinary Association at the annual meeting held at Grand Rapids, January 20. Dr. D. M. Thynge was elected secretary-treasurer. Dr. B. H. Killham, state veterinarian, was the principal speaker, addressing the meeting on the subject of "Tuberculosis Eradication." The meeting was also addressed by County Agent K. K. Vining.

The St. Joseph County Veterinary Society was organized at a recent meeting of Michigan veterinarians at Centerville, Thursday, January 19th. Dr. C. C. Dauber of Sturgis was elected president and Dr. Tobin of Three Rivers secretary-treasurer. The meeting was addressed by Drs. Newton and McCollister, B. A. I. veterinarians, and Dr. Killham, state veterinarian, on the subjects of tuberculosis and hog cholera.

Dr. W. A. Ferry of Sandusky, O., retired from the position of city dairy and food commissioner to enter private practice.

The Northwestern Ohio Veterinary Medical Association held its annual meeting at the Waldorf Hotel, Toledo, February 23, 1922, with an exceptionally large attendance. Among the old timers in the audience were Newton, Hilty, Blattenberg, Cliffe and Merillat. The officers were Dr. Glen Biddle of Bryan, president, and Dr. P. H. Fulstow, of Norwalk, secretary-treasurer.

Dr. George T. Casper, B. A. I., inspector at St. Joseph, Mo., has been transferred to Olympia, Wash., and Dr. Charles Pearson of Amarillo, Texas, goes to California for field work.

Chile has renewed an import duty of 36 cents per head on all imported cattle.

One Kansas feeder made a profit of $25,000 in feeding lambs in the fall and winter of 1921-22.